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U.S. Army Corps of Engineers
New England District

FINAL
RECORD OF DECISION
LANDFILL REMEDIATION
STUDY AREAS 6, 12, AND 13
AND AREAS OF CONTAMINATION (AOC) 9, 11, 40, AND 41
U.S. ARMY RESERVE FORCES TRAINING AREA
DEVENS, MASSACHUSETTS

JULY 1999

HLA Harding Lawson Associates

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U.S. ARMY RESERVE FORCES TRAINING AREA
DEVENS, MASSACHUSETTS

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Prepared for:

U. S Army Corps of Engineers
New England District
Concord, Massachusetts

Prepared by:

Harding Lawson Associates
Portland, Maine

JULY 1999

RECORD OF DECISION
STUDY AREAS 6, 12, AND 13
AND AREAS OF CONTAMINATION 9, 11, 40, AND 41
U.S. ARMY RESERVE FORCES TRAINING AREA
DEVENS, MASSACHUSETTS

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DECLARATION FOR THE RECORD OF DECISION

SITE NAME AND LOCATION

Study Areas 6, 12, and 13 and Areas of Contamination 9, 11, 40, and 41
U.S. Army Reserve Forces Training Area
Devens, Massachusetts

STATEMENT OF PURPOSE AND BASIS

This decision document presents the U.S. Army's selected remedial action for Study Areas (SAs) 6, 12, and 13 and Areas of Contamination (AOCs) 9, 11, 40, and 41 at the U.S. Army, Devens Reserve Forces Training Area (RFTA), Devens, Massachusetts. It was developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980 as amended, 42 USC §§ 9601 et seq. and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) as amended, 40 Code of Federal Regulations (CFR) Part 300. The following have been delegated the authority to approve this Record of Decision (ROD): The Assistant Chief of Staff for Installation Management, Department of the Army, and the Director for the Office of Site Remediation and Restoration, U.S. Environmental Protection Agency.

This decision document is based on the Administrative Record developed in accordance with Section 113(k) of CERCLA. The Administrative Record is available for public review at the Devens BRAC Environmental Office, 30 Quebec Street, Devens, Massachusetts, and at the Ayer Town Hall, Main Street, Ayer, Massachusetts. The Administrative Record Index (Appendix D of this ROD) identifies each of the items considered during selection of the remedial action.

ASSESSMENT OF THE SITE

Actual or potential releases of substances from the debris disposal sites, if not addressed by the preferred alternative or one of the other active measures considered, may present a potential threat to human health or the environment.

DESCRIPTION OF THE SELECTED REMEDY

The major components of the Army's selected remedy are described below. Remedy descriptions are preceded by a discussion of how the remedy addresses: (1) current and/or future risks presented by the landfill sites, (2) restoration and protection of natural resources, or (3) support for redevelopment. The sites are grouped together according to the remedial action component to be implemented.

SA 6

No formal risk evaluations have been performed for SA 6. 19th-century household debris at the site are not expected to pose unacceptable risk to human health or the environment. The selected remedy component for SA 6 is No Further Action under CERCLA. The site is being managed in conformance with Massachusetts Solid Waste Regulations.

SA 12, AOC 41

Currently, there are no risks to human health at SA 12 and AOC 41. Chemicals present at the two sites exceed screening standards established for residential land use. Were the sites to be occupied by year-round residents, potential health risks may be present. There are no plans for residential use of the sites. Potential, future risks to human health at both sites are, and will continue to be, addressed by restricting site access; access to both sites is controlled by the Army, who will retain the areas for military training use.

Contaminant concentrations in sediment adjacent to the Nashua River present risk to ecological receptors at SA 12. However, contaminant concentrations in sediment adjacent to the river were

higher than those in sediment at the foot of the landfill, suggesting that the river itself is a contributor to floodplain sediment contamination. Potential wildlife risks exist at AOC 41, due primarily to exposure to contaminants in surface soil. Surface soil removal will address the potential risks.

The selected remedy components for SA 12 and for AOC 41 include: (1) removal of visible man-made surface debris to remove potential physical hazards, (2) removal of known surface soil concentrated contaminant areas, or "hot spots", that are a source of potential ecological risk, and (3) future site monitoring to evaluate potential impacts from remaining debris. MADEP will be responsible for future monitoring at SA 12. As part of the activities documented in the 1996 South Post Impact Area (SPIA) Record of Decision, the Army will evaluate potential impacts to New Cranberry Pond ecological receptors from AOC 41.

AOC 9, AOC 11, SA 13, AOC 40

The selected remedy component for AOC 9 will assist the civilian redevelopment effort at Devens and remove the potential, future threat of contaminant release to area groundwater. Planned expansion of the nearby wastewater treatment facility, which provides service to the expanding Devens community, would be inhibited by the presence of AOC 9 debris. Increased use of the treatment plant could raise the water table at AOC 9 and increase the potential for contaminants to come into contact with groundwater. Removal of landfill debris allows unimpeded expansion of the treatment facility and eliminates the potential, future release of contaminants to site groundwater.

The selected remedy component for AOC 11 supports the ongoing community effort to improve the water quality of the Nashua River. To preclude further discussion on whether landfill debris or upstream industrial activity represents the source of contaminants in river sediment near the landfill, the Army has agreed to remove AOC 11 debris. The selected action eliminates AOC 11 debris as a possible current and future source of risk to fish and wildlife resources, and as a possible contaminant contributor to nearby wetlands and downstream areas of the Nashua River.

The selected remedy component for SA 13 assists civilian redevelopment at Devens. Removal of debris at SA 13 eliminates the threat of potential risk within an area of possible redevelopment. Potential risks to sensitive aquatic receptors may exist at SA 13 in the wet area downgradient of the landfill. Removal of debris and wet area soil, followed by site restoration, will address the potential ecological risks.

The selected remedy component for AOC 40 eliminates the threat of potential, future risk to a nearby public groundwater supply well, thus assisting civilian redevelopment at Devens. Expanded use of the nearby Patton water supply well, which provides service to the expanding Devens community, would otherwise be prohibited due to the presence of AOC 40 debris; increased use of the Patton well would draw groundwater from AOC 40 toward the well. Removal of landfill debris allows unimpeded, expanded use of the water supply well. Debris removal will also allow the planned realignment of Patton Road to proceed unhampered by the presence of an abutting landfill. The proposed road realignment was initially envisioned in the Approved Reuse Plan for Devens.

Debris from AOC 9, AOC 11, SA 13, and AOC 40 will be excavated and either consolidated at a new landfill cell to be constructed at the former Golf Course Driving Range, or disposed of offsite. If constructed, the new cell will be lined and capped, and long-term groundwater quality monitoring will be performed. Debris excavations at the four sites will be backfilled and regraded.

Major components of the selected remedy are:

SA 6

No further action

SA 12, AOC 41

- Surface debris removal
- Known hot-spot removal
- Site monitoring

AOC 9, AOC 11, SA 13, AOC 40

- Debris excavation, backfill, and regrading
- Wetlands restoration at AOC 9, AOC 11, and AOC 40
- Consolidation of excavated debris at onsite Consolidation Landfill, or transport to an offsite landfill
- If applicable, cover system monitoring and maintenance, and institutional controls at the Consolidation Landfill
- Institutional controls and five-year site reviews at those sites where unrestricted future use is not achievable or economical

STATE CONCURRENCE

The Commonwealth of Massachusetts has concurred with the selected remedy. Appendix E of this ROD contains a copy of the Declaration of State Concurrence.

STATUTORY DETERMINATIONS

The selected remedy is consistent with CERCLA and, to the extent practicable, the NCP. The remedy is protective of human health and environment, and complies with federal and Commonwealth requirements that are legally applicable or relevant and appropriate to the remedial action. The remedy uses permanent solutions to the maximum extent practicable. Because treatment of the principal source of contamination was found not to be practicable, this remedy does not satisfy the statutory preference for treatment as a principal element.

Institutional controls and five-year reviews will be implemented at those sites where debris is excavated and removed, but unrestricted future land use is not achievable or economical. Institutional controls will also be implemented for the consolidation landfill, should onsite consolidation be selected as the debris disposal option.

DECLARATION FOR THE RECORD OF DECISION
Study Areas 6, 12, and 13
And Areas of Contamination 9, 11, 40, and 41
U.S. Army RFTA, Devens, Massachusetts

The foregoing represents the selection of a remedial 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 Enviromental Protection.

Concur and recommend for immediate implementation:

U.S. DEPARTMENT OF THE ARMY

Raymond J. Fatz

Raymond J. Fatz
Deputy Assistant Secretary of the Army for
Environmental Safety and Occupational Health

July 19, 1999
Date

The foregoing represents the selection of a remedial 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. ENVIRONMENTAL PROTECTION AGENCY

John P. DeVillars
Regional Administrator
U.S. Environmental Protection Agency, New England

7/21/99
Date

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DECISION SUMMARY

I. SITE NAME, LOCATION, AND DESCRIPTION

Fort Devens is a Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) National Priorities List (NPL) site located in the Towns of Ayer and Shirley (Middlesex County) and Harvard and Lancaster (Worcester County), approximately 35 miles northwest of Boston, Massachusetts. Prior to closure, the installation occupied approximately 9,600 acres and was divided into the North Post, Main Post, and South Post (Figure 1 in Appendix A).

This Record of Decision (ROD) addresses landfilled debris at Study Areas (SAs) 6, 12, and 13, and Areas of Contamination (AOCs) 9, 11, 40, and 41. AOC 9 is located on the Former North Post of Devens. AOCs 11 and 40, and SA 13 are located on the Former Main Post of Devens. SAs 6 and 12, and AOC 41 are located on the South Post Reserve Forces Training Area (RFTA) (see Figure 1 in Appendix A).

A. SA 6

SA 6 is located on the eastern side of Shirley Road on the South Post (see Figure 1 in Appendix A). The South Post is to be retained by the Army for continued military training. SA 6 was used between 1850 and 1920, prior to Army ownership, for disposal of household debris. Debris was deposited in a low area, less than one-quarter acre in size, south of the access road (see Figure 2 of Appendix A). SA 6 is moderately forested with hardwood trees. The disposal area has not been covered, and debris is visible on the ground surface.

Army investigations at SA 6 determined that the landfill contains household debris, primarily metal and glass. The volume of debris in the landfill is approximately 500 cubic yards (cy). Archaeologists have determined that SA 6 may be valuable in researching the socioeconomic status and trash disposal behavior of 19th Century northern Lancaster residents.

B. AOC 9

AOC 9 is located on the former North Post, north of Walker Road and west of the wastewater treatment plant (see Figure 1 in Appendix A). The landfill was operated from the late 1950s until 1978 and was used by the Army, National Guard, contractors, and off-post personnel. Landfill material at AOC 9 is generally demolition debris, including wood, concrete, asphalt, metal, brick, glass, and tree stumps. Debris volume is estimated to be approximately 112,000 cy. Because of the extent of the partially vegetated cover, the area is generally not recognizable as a former landfill.

A geophysical survey was conducted during the site investigation to supplement information derived from evaluation of aerial photographs and to help delineate the actual limits of the landfill. The results of the survey assisted in the placement of test pits and groundwater monitoring wells, and provided insight into the distribution of landfill debris. Results of the geophysical survey indicated that the landfill consists of five areas: a larger northern pod containing the majority of landfilled materials, and four smaller southern pods adjacent to the wetlands containing mostly near-surface debris (see Figure 3 of Appendix A).

C. AOC 11

AOC 11 is located east of Lovell Road on the Main Post, adjacent to the Nashua River (see Figure 1 in Appendix A). The two-acre landfill received wood-frame hospital demolition debris from 1975 to 1980. Debris volume is estimated to be approximately 35,000 cy. The landfill is within a wetlands complex that runs along the western side of the Nashua River (see Figure 4 in Appendix A). East of the landfill, a 40-ft wide soil berm separates the landfill from the Nashua River. Refuse, including large pieces of metal, wood, bricks, and other construction debris is exposed at the ground surface throughout the site, except where an access road has been constructed over the fill. The landfill area is vegetated and is bordered on the north and south by wetlands.

D. SA 12

SA 12, about one-half acre in size, is located on a steep, wooded slope adjacent to the Nashua River floodplain and partially encroaching on wetlands on the South Post. The landfill is located across Dixie Road from B and P Ranges (see Figures 1 and 5 in Appendix A). SA 12 was used by the Army beginning in 1960, was still in use in 1982, and appeared in 1988 to have been inactive for several years. The debris came from construction and range operations.

Debris at SA 12 consist mostly of lumber, sheet metal, concrete, and leaves mixed with soil. Debris volume is estimated to be approximately 8,700 cy.

E. SA 13

SA 13 was used between 1965 and 1990 for disposal of construction debris, stumps, and brush. Debris volume is estimated to be approximately 10,000 cy. The landfill is less than one acre in size and is located on the west side of Lake George Street near Hattonsville Road on the former Main Post (see Figures 1 and 6 in Appendix A).

In 1989, recently disposed stumps, branches, steel fencing, plumbing fixtures and pipes were removed from the site. The landfill is currently closed to debris disposal.

SA 13 is surrounded by large trees, but no trees are growing on the landfill itself. Tree stumps, limbs, and trunks have been deposited on the surface of the landfill and down the steep lower slope. A wetland is located at the base of this slope.

F. AOC 40

AOC 40 occupies approximately four acres along the edge of Patton Road in the southeastern part of the former Main Post of Fort Devens. It extends for approximately 800 feet along Patton Road and out into the former wetland along Cold Spring Brook, now mostly submerged beneath Cold Spring Brook Pond (see Figures 1 and 7 in Appendix A). The upper surface of the landfill slopes gently toward the north and east. The surface is densely covered with small trees and

scrub, the trees being predominantly pines. The edge of the landfill falls off abruptly to the wetland or to the pond with an elevation drop that ranges between 10 and 20 feet.

Debris in the landfill is mostly wood, concrete, asphalt, metal, brick, wire, ash, stumps, and logs. Debris volume is estimated at approximately 110,000 cy. The AOC 40 landfill is located approximately 600 feet from the Patton water supply well, within the well's recharge zone.

G. AOC 41

AOC 41 is located on the former South Post of Fort Devens, approximately one-half mile west of the Still River Gate, on the north shore of New Cranberry Pond (see Figures 1 and 8 in Appendix A). The landfill, less than one-quarter acre in size, was used up to the 1950s for disposal of nonexplosive military and household debris. The site is overgrown with trees and brush.

Debris at AOC 41 includes beverage cans, bottles, and motor vehicle parts. Debris volume is estimated to be approximately 1,500 cy.

II. SITE HISTORY AND ENFORCEMENT ACTIVITIES

A. Land Use and Response History

Fort Devens was established in 1917 as Camp Devens, a temporary training camp for soldiers from the New England area. In 1931, the camp became a permanent installation and was renamed Fort Devens. Throughout its history, Fort Devens served as a training and induction center for military personnel, and as a unit mobilization and demobilization site. All or portions of this function occurred during World Wars I and II, the Korean and Vietnam conflicts, and operations Desert Shield and Desert Storm. During World War II, more than 614,000 inductees were processed, and Fort Devens reached a peak population of 65,000.

The primary mission of Fort Devens was to command, train, and provide logistical support for non-divisional troop units and to support and execute Base Realignment and Closure (BRAC) activities. The installation also supported the Army Readiness Region and National Guard units in the New England area.

Fort Devens was selected for cessation of operations and closure under the Department of Defense Base Realignment and Closure Act of 1990 (Public Law 101-510). The installation was officially closed in 1996.

Descriptions of the landfill sites, including contamination assessments and risk evaluations, where applicable, can be found in the following data packages, Site Investigation (SI) reports, and Remedial Investigation (RI) reports:

TABLE 1
SUMMARY OF REPORTS

Site	**Investigation Report Reference**
SA 6	Landfill Study Data Package (ABB-ES, 1994b)
SA 12, SA 13	Supplemental Site Investigation Data Packages (ABB Environmental Services, Inc. [ABB-ES], 1994a) SI Report (ABB-ES, 1995b)
AOC 9	SI Report (ABB-ES, 1996a)
AOC 11	SI Report (Arthur D. Little, 1994) RI Report (Arthur D. Little, 1995)
AOC 40	RI Report (E&E, 1993) Supplemental RI Report (ABB-ES, 1993)
AOC 41	SI Report (ABB-ES, 1995b) RI Report (ABB-ES, 1996c)

B. Enforcement and Study History

On December 21, 1989, Fort Devens was placed on the NPL under CERCLA as amended by the Superfund Amendments and Reauthorization Act (SARA). A Federal Facilities Agreement (Interagency Agreement [IAG]) was developed and signed by the Army and U. S. Environmental Protection Agency (USEPA) New England on May 13, 1991, and finalized on November 15, 1991. The IAG provides the framework for the implementation of the CERCLA/SARA process at Fort Devens.

In conjunction with the Army's Installation Restoration Program (IRP), Fort Devens and the U.S. Army Environmental Center (USAEC; formerly the U.S. Army Toxic and Hazardous Materials Agency) initiated an Enhanced Preliminary Assessment (PA) in 1992. The Enhanced PA identified and characterized Areas Requiring Environmental Evaluation (AREEs) associated with historical and current uses of the Devens property. The Enhanced PA recommended that site reconnaissance and a geophysical survey be conducted at each of the seven landfills to determine their exact location and areal extent. A field investigation comprised of surface water, sediment, soil, and/or groundwater sampling would follow.

SIs were conducted at SAs 12 and 13, and AOCs 9, 40, and 41 to verify the presence or absence of environmental contamination and to determine whether further investigation or remediation was warranted. In addition, supplemental SI activities were conducted at SAs 12 and 13, and AOC 41 to address data gaps identified in the SI reports. RIs were completed at AOCs 11, 40, and 41 to further assess contaminant distribution; the RIs included baseline human health and ecological risk assessments for the three sites.

Predesign investigations were conducted at SAs 6, 12, and 13, and AOC 9 (ABB-ES, 1994b) to define depth, areal extent, type of waste, composition of waste, and site conditions to help identify appropriate remedial alternatives.

The Landfill Consolidation Feasibility Study (FS) Report (ABB-ES, 1995a) evaluated options to consolidate debris from the seven landfills into a single waste disposal site. After reviewing the FS report, the U.S. Army Forces Command (FORSCOM) requested evaluation of non-

consolidation, containment options such as capping landfills in-place. In response to FORSCOM comments, the Debris Disposal Area Technical Memorandum (ABB-ES, 1996b) was issued in February 1996. The memorandum evaluated a cap-in-place and a consolidation option for each of the seven landfills.

To further respond to FORSCOM comments, the Landfill Remediation FS Report was prepared (ABB-ES, 1997). This FS report evaluated nine debris management alternatives, including various combinations of no further action, capping in-place, and debris removal and consolidation.

In the December 1997 Proposed Plan, the Army proposed an alternative that consisted of debris removal at three of the debris disposal areas (AOCs 9 and 40, and SA 13), with consolidation at a new landfill to be constructed in the area near the existing Shepley's Hill Landfill. Public comment on the Plan indicated a community preference for debris disposal either in an offsite landfill, or in a new onsite landfill in an alternate location. Because of the site's proximity to the Nashua River floodplain, the community also indicated a preference for full excavation and removal of debris from AOC 11.

In response to public comment, the Army issued a second Proposed Plan in November 1998. The proposed alternative included full debris removal at AOCs 9, 11, and 40, and SA 13, with disposal either at an offsite landfill, or at a new onsite landfill to be constructed at the former Golf Course Driving Range.

The Responsiveness Summary in Appendix C presents public comment received on each of the Army's two proposals, along with Army responses. The information in Appendix C helps describe how public comments influenced remedy selection.

III. COMMUNITY PARTICIPATION

The Army has held regular and frequent information meetings, issued fact sheets and press releases, and held public meetings to keep the community and other interested parties informed of activities at the seven landfills.

In February 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 Fort Devens. As part of this plan, the Army established a Technical Review Committee (TRC) in early 1992. The TRC, as required by SARA Section 211 and Army Regulation 200-1, included representatives from USEPA, USAEC, Fort Devens, Massachusetts Department of Environmental Protection (MADEP), local officials, and the community. Until January 1994, when it was replaced by the Restoration Advisory Board (RAB), the committee generally met quarterly to review and provide technical comments on schedules, work plans, work products, and proposed activities at Fort Devens. SI, RI, and FS reports, Proposed Plan, and other related support documents were submitted to the TRC or RAB for their review and comment.

The Army, as part of its commitment to involve the affected communities, forms a RAB when an installation closure involves transfer of property to the community. The Fort Devens RAB was formed in February 1994. The RAB initially consisted of 28 members (15 original TRC members plus 13 new members) representing the Army, USEPA New England, MADEP, local governments, and citizens of the local communities. The RAB currently consists of 19 members. It meets monthly and provides advice to the installation and regulatory agencies on the Devens RFTA cleanup programs. Specific responsibilities include: addressing cleanup issues such as land use and cleanup goals; reviewing plans and documents; identifying proposed requirements and priorities; and conducting regular meetings open to the public.

On December 8, 1997 the Army issued the first of two Proposed Plans to interested citizens and organizations. The Army made the Proposed Plan available to the public at information repositories at the town libraries in Ayer, Shirley, Harvard, and Lancaster, and at the Devens BRAC Environmental Office. The Army responded to a request by the Town of Ayer selectmen

by mass-mailing copies of the Proposed Plan to residential address in six central Massachusetts U.S. Postal Service zip codes, including 01432 (Ayer), 01451 (Harvard), 01464 (Shirley), 01467 (Still River), 01523 (Lancaster), and 01561 (South Lancaster). The December 1997 Proposed Plan described the Army's preferred remedy for cleanup of the seven landfills. Debris at three of the landfills (AOCs 9 and 40, and SA 13) would be completely excavated and relocate at a new landfill to be constructed near the existing Shepley's Hill Landfill. The Proposed Plan described opportunities for public participation in the decision process, and provided details on the public comment period and public meeting planned for January 8, 1998.

Public notices announcing the January 8 meeting were published on three different occasions. A notice appeared in the Times Free Press/Public Spirit, the Worcester Telegram, and the Fitchburg-Leominster Centennial and Enterprise during the weeks of December 7 and December 28, 1997, and January 4, 1998. A notice appeared in the Lowell Sun during the week of December 7, 1997, and twice during the week of January 4, 1998. At the meeting, the Army announced the extension of the public comment period from the CERCLA-typical 30 days to 90 days. During the public comment period, the Army accepted comments on the alternatives presented in the FS report and the Proposed Plan, and on other documents released to the public. The 90-day comment period began on December 8, 1997, and ended on March 9, 1998.

A second public meeting was conducted on February 25, 1998. During the meeting, the Army presented additional details of the preferred alternative presented in the December 1997 Proposed Plan. A public notice announcing the February 25 meeting appeared the week of February 15, 1998 in the Times Free Press/Public Spirit, the Worcester Telegram, the Fitchburg-Leominster Centennial and Enterprise, and the Lowell Sun.

Public comment on the December 1997 Proposed Plan indicated a community preference for debris disposal either in an offsite landfill, or in a new onsite landfill in an alternate location. Because of the site's proximity to the Nashua River floodplain, the community also indicated a preference for full excavation and removal of debris from AOC 11.

In response to public comment, the Army issued a revised Proposed Plan on November 25, 1998. The proposed alternative in the November 1998 Proposed Plan included full debris removal at

AOCs 9, 11, 40, and SA 13, with disposal either at an offsite landfill, or at a new onsite landfill to be constructed at the former Golf Course Driving Range. A Feasibility Study Addendum Report (Harding Lawson Associates [HLA], 1998) evaluated the proposed alternative, and others formulated in response to public comment.

The Army made the November 1998 Proposed Plan available to the public at information repositories at the town libraries in Ayer, Shirley, Harvard, and Lancaster, and at the Devens BRAC Environmental Office. As with the previous Proposed Plan, the November 1998 Proposed Plan was mass-mailed to residential addresses in the six central Massachusetts zip codes which comprise the former Fort Devens. The November 1998 Proposed Plan described opportunities for public participation in the decision process, and provided details on the public comment period and public meeting planned for December 10, 1998.

Public notices announcing the December 10 meeting were published in the Times Free Press/Public Spirit during the week of November 29, 1998, and in the Worcester Telegram, the Fitchburg-Leominster Centennial and Enterprise, and Lowell Sun during the week of December 6, 1998. At the meeting, the Army announced the extension of the public comment period from the CERCLA-typical 30 days to 45 days. During the public comment period, the Army accepted comments on the alternatives presented in the FS report and the Proposed Plan, and on other documents released to the public. The 45-day comment period began on November 25, 1999, and ended on January 11, 1999.

As with the two previous meetings, the December 10 public meeting provided opportunity for open discussion concerning proposed cleanup. Transcripts of the three public meetings, public comments, and the Army's response to comments are included in the Responsiveness Summary (Appendix C).

Supporting documentation for the decision regarding the seven landfills is contained in the Administrative Record. The Administrative Record is a collection of all the documents considered by the Army in choosing the remedy for the seven landfill sites. The Army has made the Administrative Record available for public review at the Devens BRAC Environmental Office, and at the Ayer Town Hall, Ayer, Massachusetts. An index to the Administrative

Record, provided as Appendix D, is available at the USEPA New England Records Center, 90 Canal Street, Boston, Massachusetts.

IV. SCOPE AND ROLE OF THE RESPONSE ACTION

The Army developed the selected remedy by combining full debris removal, limited surface soil/debris removal, and environmental monitoring actions at the seven landfill sites. The selected remedy offers a balanced approach, providing aggressive actions such as complete removal at those sites where debris poses a more serious potential impact, and less aggressive actions such as surface removal at sites where debris poses only slight or no impact.

The principal threats posed by debris at the seven landfills will be addressed by the selected remedy. Removal of debris from AOCs 9, 11, and 40 and SA 13 will eliminate potential human health and ecological risk posed by possible contaminant release. In addition, land re-use needs at Devens will be fostered because property currently occupied by landfill debris will be made available for future development.

This ROD addresses the second of two planned activities at AOC 41. The first activity addressed groundwater. This one addresses debris disposal. Contaminants detected in AOC 41 groundwater have been determined not to pose unacceptable human health risk. In the 1996 South Post Impact Area (SPIA) Record of Decision, the Army selected a “no remedial action” remedy for groundwater. Long-term groundwater quality monitoring will be conducted as part of the no action decision. During the RI conducted at AOC 41, it was determined that the source of groundwater contamination was not the landfill debris. As part of the activities described in the South Post impact Area (SPIA) ROD, the Army will evaluate potential impacts to New Cranberry Pond ecological receptors from AOC 41 contaminants.

V. SUMMARY OF SITE CHARACTERISTICS

Summaries of contaminant concentrations reported at AOC 9, AOC 11, SA 12, SA 13, AOC 40, and AOC 41 are presented in the following paragraphs. Tables summarizing maximum, average, and background concentrations of contaminants reported in the various landfill site media are included in Appendix F.1.

Risk to human health and the environment were determined for six debris landfill sites. Risk evaluations were not performed for SA 6. Preliminary risk evaluations (PREs) were conducted for AOCs 9, and 41, and for SAs 12 and 13. Human health and ecological baseline risk assessments were conducted for AOC 11 and AOC 40. A description of risks associated with each of the six sites is presented in Section VI of this ROD.

A. AOC 9

1) Surface Water

During the site investigation of AOC 9, surface water samples were collected from the Nashua River and the swampy area south of the debris landfill. Concentrations of some inorganics were measured above background levels. The SI report suggested that inorganic concentrations in the river likely represent typical Nashua River water quality in the general area. The SI report concluded that contaminant impacts to surface water from AOC 9 debris are probably not significant.

2) Sediment

Relatively low concentrations of total petroleum hydrocarbons (TPHC) and some inorganics are present in sediment samples collected from the swampy area south of the debris landfill. Relatively low concentrations of volatile organic compounds (VOCs) and sernivolatile organic compounds (SVOCs) were measured in sediment samples collected from the Nashua River. Concentrations of inorganics in Nashua River sediment samples were relatively consistent upstream and downstream of AOC 9, and likely represent typical Nashua River sediment quality

in the area. The SI report concluded that contaminant impacts to sediment from AOC 9 debris are probably not significant.

3) Surface Soil

Organic contaminants were not detected in surface soil samples collected at AOC 9. The inorganics copper, lead, and nickel were detected at concentrations above the levels established as background at Devens, but below residential standards set by USEPA. Arsenic was detected at a concentration above USEPA residential standards, but below Devens background.

4) Subsurface Soil

Organic compounds detected in AOC 9 subsurface soil consist mostly of PAHs and TPHC. Due to their consistent co-location in samples collected from AOC 9, PAHs and TPHC are believed to be present as a result of charred lumber and ashes mixed with the demolition debris. Except for arsenic and beryllium, maximum concentrations of inorganics detected in subsurface soil were below screening standards established by USEPA for protection of a commercial/industrial worker. The maximum concentration of arsenic was equal to the Devens background concentration, and the maximum concentration of beryllium (1.0 micrograms per gram [µg/g]) was higher than the commercial/industrial standard (0.67 µg/g).

5) Groundwater

Two rounds of groundwater samples were collected from monitoring wells at the site during the investigation. Two organic compounds were detected in AOC 9 groundwater. Chloroform was detected in one of ten samples collected during Round 1. The chloroform concentration was below the Massachusetts drinking water standard. TPHC was detected in three of ten samples, once in Round 1 and twice in Round 2. No drinking water standard or guideline exists for TPHC.

Inorganics were detected above background concentrations in nearly all groundwater samples collected from AOC 9 monitoring wells. Several organics were detected in up-, down-, and cross-gradient wells. Maximum concentrations of eight of the eighteen inorganics detected in

unfiltered Round 1 samples exceeded their respective drinking water standard or guideline. The eight inorganics are aluminum, arsenic, chromium, cobalt, iron, lead, manganese, and nickel. Filtered samples collected during Round 2 showed reductions in concentrations of these inorganics, suggesting that elevated concentrations are due to suspended solids in the samples. During Round 2, reported concentrations of chromium, lead, and nickel were below their respective drinking water standards or guidelines.

B. AOC 11

1) Surface Water

The RI report for AOC 11 concluded the primary mode of contaminant transport from the debris landfill is by surface water runoff into the wetland areas adjacent to the landfill, where a significant proportion of contaminants sorb to sediments. Surface water in the wetlands contains metals and polynuclear aromatic hydrocarbons (PAHs). However, the Nashua River contains metals and PAHs in surface water both adjacent to and upstream of AOC 11. Contamination in wetland surface water could be attributed to Nashua River contamination, and may not be related to AOC 11 debris.

2) Sediment

Sediments in the Nashua River and in wetland areas adjacent to the debris landfill contain pesticides, polychlorinated biphenyls (PCBs), PAHs, and metals. Pesticides concentrations were below Devens background levels; it is not clear whether PCBs, detected at relatively low concentrations in sediment, are from the debris area or from the Nashua River during periodic flooding; PAHs could be attributable to the Nashua River, and may not be related to AOC 11 debris; some metals were detected in sediment at concentrations exceeding Devens background levels.

3) Surface Soil

Pesticide concentrations measured in surface soil samples were, with the exception of one sample, below Devens background levels. Higher concentrations of PAHs were measured in surface soil samples collected within the debris area, compared to those collected outside the area. Metals were detected at levels exceeding background concentrations at sample locations throughout the site.

4) Groundwater

Two rounds of groundwater sampling were collected for analysis during the remedial investigation. Relatively low levels of the pesticides DDD and 2,2-bis(para-chlorophenyl)-1,1,1- trichloroethane (DDT) were detected in one monitoring well during the first round. Several metals were detected in groundwater during both sampling rounds. The highest metals concentrations were found in the northernmost groundwater monitoring well 11M-94-05X. Higher concentrations, and more metals types were detected in the shallower wells screened near the water table, while lower metals concentrations were detected in the deep well screened just above bedrock. Sampling results indicated that assorted metals at concentrations above and below respective drinking water standards and guidelines are being transported from the debris landfill to the Nashua River via groundwater flow.

C. SA 12

1) Surface Water

Inorganics were detected in surface water samples collected between the SA 12 debris area and the Nashua River. These detections could be attributable to Nashua River contamination, and may not be related to SA 12 debris.

2) Sediment

Sediments between the SA 12 debris area and the Nashua River contain PAHs, TPHC, pesticides, and inorganics. Concentrations of similar contaminants in Nashua River sediment were higher than those in sediment at the foot of the debris area. This suggests that the river itself contributes to sediment contamination at the foot of the debris area.

3) Surface Soil

The highest concentrations of PAHs, TPHC, pesticides, and inorganics measured in surface soil at SA 12 were associated with samples collected from the soil directly above the debris landfill. Evaluation of samples collected at SA 12 indicate that the majority of potential human health and ecological risk from surface soil results from stained soil directly above the debris area.

4) Groundwater

Organic compounds were not detected in groundwater samples collected at SA 12. Inorganic compounds were detected in unfiltered groundwater samples collected from shallow sumps downgradient from the debris landfill. It is believed that levels of inorganics detected in groundwater at SA 12 are due largely to suspended solids present in the samples.

D. SA 13

1) Surface Water

Organic and inorganic compounds were detected in surface water samples collected from the wet area at the toe of the debris area. Nitroglycerine was detected in one of four surface water samples, at a concentration above its drinking water standard. Inorganic compounds in surface water, particularly mercury, present potential risk to sensitive aquatic ecological receptors.

2) Sediment

Sediments at SA 13 contain PAHs, TPHC, pesticides, and inorganics. Pesticides in sediment present potential risk to sensitive aquatic ecological receptors.

3) Surface Soil

Soil samples collected from stained areas directly over the debris area contained PAHs, TPHC, pesticides, and inorganics. Surface soil samples collected directly from the debris area contained higher concentrations of contaminants than those collected downgradient from the landfill.

4) Groundwater

Contaminants detected in groundwater at SA 13 are primarily inorganics. It is believed that levels of inorganics detected in groundwater at SA 13 are attributable to suspended solids present in the unfiltered samples.

E. AOC 40

1) Surface Water

Inorganic compounds were detected in surface water samples collected from Cold Spring Brook Pond. Surface water contamination does not pose a risk to ecological receptors at the debris disposal area.

2) Sediment

Sediments in Cold Spring Brook Pond contain PAHs, pesticides, and inorganics. Risk to ecological receptors at two isolated areas in the pond are attributed to arsenic and the pesticide 2,2 bis(para-chlorophenyl)-1,1-dichloroethane (DDD).

3) Surface Soil

Samples collected from the debris landfill soil cover contain PAHs, pesticides, and inorganics. The relatively low concentrations of surface soil contaminants pose neither human health nor ecological risks.

4) Groundwater

Groundwater quality at AOC 40 was characterized during two rounds of sampling during the remedial site investigation, and during two rounds of sampling during the supplemental remedial investigation. Contarninants detected in groundwater are primarily inorganics. At this point in time, under existing conditions, the Army has concluded that AOC 40 is not a source of inorganic groundwater contamination.

F. AOC 41

1) Surface Water

Organic and inorganic contaminants were detected in surface water samples collected from New Cranberry Pond, near AOC 41. The concentrations are not considered significant.

2) Sediment

Pesticides and inorganics were detected in sediment samples collected from New Cranberry Pond near AOC 41. It is unlikely that the contaminants pose a risk to ecological receptors.

3) Surface Soil

TPHC, PAHs, pesticides, and inorganics were detected in surface soil samples collected at the landfill. Some contaminant concentrations exceeded screening standards established by USEPA for protection of potential residents living at the site. There are no residents occupying the site. Surface soil contaminants were found to pose no risk to ecological receptors.

4) Groundwater

During the remedial investigation conducted at AOC 41, it was determined that the source of groundwater contamination was not the landfill debris. In the 1996 SPIA Record of Decision, the Army selected long-term groundwater monitoring as the remedy for groundwater.

VI. SUMMARY OF SITE RISKS

Currently, there are no risks to human health at SA 12 and AOC 41. Chemicals present at the two sites exceed screening standards established for residential land use. Were the sites to be occupied by year-round residents, potential health risks may be present. There are no plans for residential use of the sites. Potential, future risks to human health at both sites are, and will continue to be, addressed by restricting site access; access to both sites is controlled by the Army, who will retain the areas for military training use.

Contaminant concentrations in sediment adjacent to the Nashua River present risk to ecological receptors at SA 12. However, contaminant concentrations in sediment adjacent to the river were higher than those in sediment at the foot of the landfill, suggesting that the river itself is a contributor to floodplain sediment contamination. Potential wildlife risks exist at AOC 41, due primarily to exposure to contaminants in surface soil. Limited debris/surface soil removal will address the potential risks.

The selected remedy component for AOC 9 will assist the civilian redevelopment effort at Devens and remove the potential, future threat of contaminant release to area groundwater. Planned expansion of the nearby wastewater treatment facility, which provides service to the expanding Devens community, would be inhibited by the presence of AOC 9 debris. Increased use of the treatment plant could raise the water table at AOC 9 and increase the potential for contaminants to come into contact with groundwater. Removal of landfill debris allows unimpeded expansion of the treatment facility and eliminates the potential, future release of contaminants to site groundwater.

The selected remedy component for AOC 11 supports the ongoing community effort to improve the water quality of the Nashua River. To preclude further discussion on whether landfill debris or upstream industrial activity represents the source of contaminants in river sediment near the landfill, the Army has agreed to remove AOC 11 debris. The selected action eliminates AOC 11 debris as a possible current and future source of risk to fish and wildlife resources, and as a possible contaminant contributor to nearby wetlands and downstream areas of the Nashua River.

The selected remedy component for SA 13 assists civilian redevelopment at Devens. Removal of debris at SA 13 eliminates the threat of potential risk within an area of possible redevelopment. Potential risks to sensitive aquatic receptors may exist at SA 13 in the wet area downgradient of the landfill. Removal of debris and wet area soil, followed by site restoration, will address the potential ecological risks.

The selected remedy component for AOC 40 eliminates the threat of potential, future risk to a nearby public groundwater supply well, thus assisting civilian redevelopment at Devens. Expanded use of the nearby Patton water supply well, which provides service to the expanding Devens community, would otherwise be prohibited due to the presence of AOC 40 debris; increased use of the Patton well would draw groundwater from AOC 40 toward the well. Removal of landfill debris allows unimpeded, expanded use of the water supply well. Debris removal will also allow the planned realignment of Patton Road to proceed unhampered by the presence of an abutting landfill. The proposed road realignment was initially envisioned in the Approved Reuse Plan for Devens.

Site Risk Summaries

Risks to human health and the environment were determined for six debris landfill sites. Risk evaluations were not performed for SA 6. Due to the nature and relatively small volume of debris, risks to potential human and ecological receptors at SA 6 are considered non-existent.

Preliminary risk evaluations (PRE) were conducted for AOCs 9 and 41, and for SAs 12 and 13. Human health and ecological risk assessments were conducted for AOCs 11 and 40. Risk assessments included the same information as the preliminary evaluation, and more. Risk

assessments and PREs performed for the six sites are consistent with relevant guidance and standards developed by USEPA. Typically, data from scientific literature are combined with professional judgment.

The PRE included:

- Identification of environmental media (such as soil, groundwater, surface water, or sediment) where there are debris-related materials.
- Comparison of chemical concentrations in selected media to standards established for protection of human health and the environment.
- Comparison of chemical concentrations in selected medial to concentrations present in areas where debris has not been deposited (background concentrations).
- Discussion of comparison results (risk characterization).

In the PREs, very conservative (that is, protective of human health and the environment) assumptions are used. For example, it is usually assumed that a house could be built directly on the debris disposal site (potential future residential use), and that people could be exposed to debris up to three feet below ground. It is also assumed that people or wildlife would be exposed to the one area where the highest concentration of a chemical was found, rather than to the entire area. Another conservative assumption is that people would be drinking water that comes from the site. It is unlikely that people would drink groundwater from most of the landfill sites addressed in this ROD. Am exception is AOC 40, proximate to the designated Zone II protection area of the Patton groundwater supply well and therefore a potential future threat to a public drinking water supply.

The risk assessments included:

- A description of the possible health effects of the chemicals present at the site (toxicity assessment).
- Identification of people and wildlife likely to be present at the site under current and future land use (exposure assessment).

- Development of numerical risk estimates for potential cancer effects and hazard quotients (ratio of the amount of chemical to which a person or wildlife may be exposed to the safe amount established for those receptors) for noncancer effects.
- Comparison of these estimates to acceptable risk targets established by the USEPA. For human health, the target cancer risk is one additional cancer case in one million people (the acceptable risk range is 1x10-4 to 1x10-6); the target noncancer hazard quotient is one.

The risk assessments included many of the same conservative assumptions as the preliminary evaluations; however, they also considered more reasonable exposures. For example, many of the debris disposal sites are in areas that may not be used by people, or may be put to a commercial use such as an office building or a parking lot.

Tables summarizing risk assessment results for AOC 11 and AOC 40 are shown in Appendix F.2. Tables summarizing preliminary risk evaluation results for AOC 9, SA 12, SA 13, and AOC 41 are shown in Appendix F.3. Text summaries of the risk assessment and preliminary risk evaluation results are presented in the following paragraphs.

A. Human Health Risks

1) AOC 9

A human health PRE was conducted to evaluate potential risks associated with exposure to contaminants in surface soil, subsurface soil, groundwater, surface water, and sediment at AOC 9.

Surface Soil. Three inorganic compounds (i.e., copper, lead, and nickel) were detected in surface soil at concentrations above background levels determined for Devens; however, concentrations were below USEPA Region III residential soil concentrations. Although arsenic was detected at a concentration above the USEPA Region III residential soil concentration, it did not exceed the Devens statistical background concentration. Commercial activities such as light industrial business or technology research are planned for the site. No residential use is planned.

Therefore, comparison of chemical concentrations in surface soil to values developed as protective of site residents is conservative, and likely overstates risk.

Subsurface Soil. Organic compounds detected in AOC 9 subsurface soil consisted mostly of PAHs. Of the sixteen detected PAHs, the maximum detected concentrations of six exceeded USEPA Region III commercial/industrial soil concentrations.

Although several inorganic compounds were detected in AOC 9 subsurface soil at concentrations above base-wide statistical background concentrations, only two compounds (i.e., arsenic and beryllium) were present at concentrations above USEPA Region III commercial/industrial soil concentrations. In the case of arsenic, the maximum detected concentration (i.e., 21 µg/g) is equal to the Devens statistical background concentration. The maximum beryllium concentration (i.e., 1.0 µg/g) exceeded the USEPA Region III commercial/industrial concentration (0.67 µg/g).

TPHC were detected in subsurface soil samples from 4 test-pits; however, there are no applicable federal soil standards for TPHC in soil. Comparison of reported concentrations to Massachusetts Contingency Plan (MCP) criteria shows that concentrations in all samples were below S-1/S-2 criteria except the 8-feet below ground surface (bgs) sample from test-pit 09E-92-02X. The reported concentration of 5,300 µg/g exceeded the MCP S-2 criteria of 2,500 µg/g for soils at depths of 3 to 15 feet, and exceeded the 5,000 µg/g criteria for soils deeper than 15 feet bgs.

Although exceedances of screening standards were noted, the PRE concluded the potential for exposure was minimal for the planned site use.

Groundwater. Two organic analytes, chloroform and TPHC, were detected in AOC 9 monitoring wells. Chloroform was detected once in Round 1 at 0.585 micrograms per liter (µg/L), a concentration below the Massachusetts drinking water guideline. The chloroform detection was attributed to laboratory contamination. TPHC was detected in three out of ten samples, once in Round 1 and twice in Round 2. No federal drinking water standard or guideline exists for TPHC, so concentrations were compared to proposed MCP GW-1 guidance values. Detected concentrations were slightly greater than the proposed guidance value. Two of the

three TPHC detections were in a groundwater monitoring well located upgradient of the landfill boundary.

Inorganic analytes were detected above background in virtually all groundwater samples collected from up-, down-, and cross-gradient AOC 9 monitoring wells. The maximum detected concentrations of eight of the 18 inorganic analytes exceeded their respective drinking water standard or guideline. The eight analytes were aluminum, arsenic, chromium, cobalt, iron, lead, manganese, and nickel.

Filtered samples collected during Round 2 showed significant reductions in the concentrations of these analytes. Therefore, elevated concentrations of inorganics were believed to be the result of suspended materials in the unfiltered groundwater samples. Concentrations of chromium, lead, and nickel, in all four filtered samples were below the respective drinking water standard or guideline. Concentrations of aluminum, arsenic, and iron, in three out of four filtered samples were below drinking water standards or guidelines. The standard for arsenic was exceeded in a sample collected upgradient from the landfill boundary. Cobalt was not detected above the detection limit in four out of four filtered samples. For manganese, the concentrations of two out of four filtered samples were below the USEPA secondary Maximum Contaminant Level (MCL). Commercial activities such as light industrial business or technology research are planned for the site. No residential use is planned. Therefore, comparison of chemical concentrations in groundwater to values protective of site resident ingestion of groundwater is conservative, and likely overstates current risk.

There is potential for AOC 9 landfill debris, a portion of which lies below the water table, to release contaminants to site groundwater. In addition, planned expansion of the nearby wastewater treatment facility, which provides service to the expanding Devens community, would be inhibited by the presence of AOC 9 debris. Increased use of the treatment plant could raise the water table at AOC 9 and increase the potential for contaminants to come into contact with groundwater.

Surface Water. Of the eight analytes detected in the surface water in this area, two (i.e., Bis(2-ethylhexl) phthalate [BEHP] and iron) were detected at concentrations above their respective

drinking water standards and guidelines. BEHP was detected in one of three samples at a concentration slightly above the USEPA Region III tap water concentration. Iron was detected in three of three samples at concentrations above the USEPA secondary MCL for iron. The magnitude and frequency of exposure to surface water in this area are expected to be less than that upon which the drinking water guidelines are based. Use of drinking water guidelines for comparison to surface water concentrations is a conservative approach due to a lack of available health-based guidelines for exposure to surface water.

Sediment. Of 13 analytes detected in sediments, arsenic had concentrations exceeding USEPA Region III residential soil concentrations. The USEPA Region III residential soil concentration is designed to be protective for exposures that could occur 350 days per year for a residential lifetime of 30 years. Arsenic, therefore, is not expected to pose a significant human health risk in the sampled swampy area, because exposure to sediment in this area would be much less than that expected in a residential setting.

2) AOC 11

A human health risk assessment was conducted to evaluate potential human health risks associated with exposure to contaminants in surface soil, surface water and sediment at AOC 11.

Surface Soil. Risks were calculated for recreational exposures to adults and children including incidental ingestion and dermal contact. Cancer risks related to incidental ingestion for the average and maximum exposure scenarios are all equal or below $1x10^{-6}$. No individual contaminants of concern (COCs) contribute greater than $1x10^{-6}$ to the incremental cancer risk from incidental ingestion. For potential dermal exposures, no cancer risks were calculated due to a lack of recommended absorption values or published toxicity values for the COCs. The risk assessment results show no unacceptable carcinogenic health effects are likely to occur from exposure to surface soils at AOC 11.

The noncancer hazard index (HI) for all scenarios is less than 1. The risk assessment results show no unacceptable noncancer health effects are likely to occur from exposure to surface soils at AOC 11.

Surface Water. Risks associated with Nashua River surface water were calculated based on adult and child swimming scenarios (i.e., incidental ingestion and dermal contact). Risks associated with surface water in the Northern and Southern Wetlands were based on adult and child wading scenarios (i.e., dermal contact). Carcinogenic risks for incidental ingestion of Nashua River surface water were below the USEPA's guidance range of $1x10^{-6}$ to $1x10^{-4}$. Noncancer risks for incidental ingestion of Nashua River surface water were also below guidance values.

Total cancer risks associated with dermal contact with Nashua River surface water are below the USEPA guidance for average concentrations, and within the guidance range for maximum concentrations. BEHP has an individual cancer risk that exceeds the lower value of the range. It is possible that the BEHP reported in AOC 11 samples resulted from laboratory contamination. Cancer risks are also within the USEPA risk range for dermal contact with surface waters from the Northern and Southern Wetland. In the Northern Wetland, the risk is primarily due to concentrations of DDD, DDT, and arsenic. In the Southern Wetland, DDD and DDT are the primary contributors to risk. The risk assessment results indicate that unacceptable carcinogenic health effects are unlikely to occur from exposure to surface water at AOC 11.

Noncancer risks associated with dermal contact of surface water in all three locations are less than the USEPA guidance value of 1. The risk assessment results indicate that noncancer health effects are unlikely to occur as a result of this surface water exposure level.

Sediment. Risks associated with sediment from the three locations were calculated based on adult and child dermal contact scenarios. Estimated cancer risks for dermal contact with sediment in the Nashua River were equal to the low limit of the guidance range, and no individual COC exceeded this range. The cancer risk was associated with potential exposure to Arochlor 1016, Arochlor 1254, and Arochlor 1260. Because inorganic COCs do not have recommended dermal absorption values or published toxicity values, estimated cancer risks for Northern and Southern Wetland sediments were not calculated.

Noncancer HIs do not exceed 1 for dermal contact with sediment in the Nashua River, Northern Wetland, or Southern Wetland, indicating that noncancer health effects are unlikely to occur when individuals contact these sediments.

3) SA 12

A human health PRE was conducted to evaluate potential human health risks associated with exposure to site contaminants in surface soil, groundwater, sediment, and surface water. The future use of SA 12 was assumed to be residential for purposes of the PRE. However, the Army is retaining the property on Devens' South Post, and has no plans to develop residences at SA 12. Therefore, comparison of chemical concentrations in site media to values considered protective of site resident exposure is conservative, and likely overstates risk.

Surface Soil. Surface soils at SA 12 were collected from stained surficial soils and shallow soil depths. The levels of detected organic analytes in surface soil were generally below USEPA Region III residential soil concentrations. Exceptions are Arochlor 1254 and benzo[b]fluoranthene, which was detected at a concentration of 1 µg/g in one of the nine samples collected. The USEPA Region III residential concentration for benzo[b]fluoranthene is 0.87 µg/g. Arochlor 1254 was detected at a concentration of 6.9 µg/g in one of the nine samples collected. The USEPA Region III residential soil concentration for Arochlor 1254 is 0.0083 µg/g.

Of the eight inorganic analytes detected above the base-wide statistical background concentrations, beryllium and lead were detected at concentrations above their respective health-based soil guideline. Lead (at a maximum concentration of 880 µg/g) was detected at concentrations exceeding the USEPA Superfund lead cleanup level of 500 µg/g; this exceedance occurred in one sampling location. Beryllium concentrations (maximum at 0.74 µg/g) exceeded the USEPA Region III residential soil concentration (i.e., 0.15 µg/g) in three of nine samples. Arsenic was detected at concentrations (maximum at 21 µg/g) above its USEPA Region III residential soil concentration (i.e., 0.36 µg/g). However, the maximum arsenic concentration did not exceed the base-wide statistical background concentration. Based on this screening-level analysis, it appeared that beryllium and lead may pose a potential risk to human health at the

reported sampling locations among the area of stained surficial soils, if the site were to be developed for residential use. However, no plans exist for residential use of the site.

Groundwater. Unfiltered groundwater samples from four downgradient sump locations were used to assess the impact of the landfill on groundwater. Of the two organic compounds (i.e., BEHP and chloroform) detected in groundwater associated with SA 12, BEHP concentrations exceeded a drinking water standard. BEHP was detected in one of six samples at a concentration of 9.1 µg/L, slightly above the USEPA Region III tap water concentration of 6.1 µg/L. BEHP therefore was not believed to pose a significant human health risk. It is possible that the BEHP reported in SA 12 samples resulted from laboratory contamination.

When comparing inorganic concentrations to the base-wide statistical background concentrations, significant exceedances included: aluminum, arsenic, chromium, copper, iron, lead, manganese, mercury, and zinc. Seven inorganic analytes were detected at concentrations above their drinking water standard/guideline. Aluminum, iron, and manganese were detected in six of six samples collected and each average concentration exceeded its respective USEPA secondary MCL. Beryllium, antimony, and cadmium were detected in one of six samples and the detected concentration of each contaminant exceeded its respective drinking water standard/guideline. In addition, the maximum and average concentrations of lead exceeded the USEPA lead action level.

A filtered sample was collected during Round 2 sampling. A comparison of the filtered and unfiltered samples indicated that suspended solids were responsible for high levels of some inorganic analytes, such as aluminum, calcium, iron, potassium, magnesium, and manganese. Based on the filtered-sample screening-level analysis, it appears that possibly beryllium and antimony may pose a potential risk to human health at the reported sampling locations, assuming groundwater at the site were to be ingested. Although the filtered concentrations of beryllium and antimony are below detection limits, the detection limits for the two inorganics are above the drinking water standards used in the risk evaluation. In any case, groundwater at the site would not be ingested because the Army is retaining SA 12 and has no plans to use groundwater as a drinking water supply.

Surface Water. One organic compound, BEHP, was detected below its USEPA Region III tap water concentration in surface waters associated with SA 12. BEHP is a common laboratory contaminant, and it is possible that the BEHP reported in SA 12 samples resulted from laboratory contamination. Five inorganic analytes were detected in surface waters at concentrations that exceeded their respective drinking water standard/guideline. The maximum concentration of lead was three times the USEPA lead action level and the average concentration slightly exceeded the action level. Aluminum, iron, and manganese were detected in all samples collected and each exceeded its respective USEPA secondary MCL. The maximum concentration of arsenic exceeded the Massachusetts drinking water guideline; however, the average concentration in the four surface water samples did not.

Comparison of chemical concentrations in surface water to drinking water guidelines is a conservative approach used due to lack of available health-based guidelines for surface water exposure. The magnitude and frequency of exposure to surface water associated with SA 12 is expected to be much less than that upon which drinking water guidelines are based. Because exposure to surface water is anticipated to be restricted to wading, it is not likely an individual would encounter inorganic concentrations that would pose a threat to the individual's health.

Sediment. Several organic analytes were detected in sediment samples, including: pesticide residues, PAHs, PCBs, acetone, and BEHP. Acetone and BEHP are common laboratory contaminants and were not considered to be SA 12-related contaminants. The levels of PAHs detected in the sediment were below MCP S-2/GW-1 soil standards and USEPA Region III residential soil concentrations. Concentrations of DDT and its breakdown products were also below USEPA Region III residential soil concentrations.

Arochlor 1248 and Arochlor 1260 were the detected PCBs. The maximum detected concentrations of Arochlor 1248 and Arochlor 1260 exceeded the Region III residential soil concentration for PCBs.

Of the inorganic analytes detected in the sediment, antimony, arsenic, cadmium, and lead exceed their respective USEPA Region III residential soil concentration. However, these compounds are not expected to pose a significant health risk in the sampled areas because exposure to sediment

in these areas would be less than that expected in a residential setting. The Army is retaining property in Devens' South Post, and has no plans to develop residential housing at the site. Further, similar contaminants were reported in both the Nashua River-fed surface water and the sediment samples collected between the SA 12 landfill and the river. This sharing suggests possible contaminant contribution from upriver sources in the Nashua River.

4) SA 13

A human health PRE was conducted to evaluate potential human health risks associated with exposure to site contaminants in SA 13 surface soil, groundwater, surface water, and sediment. Future use of SA 13 was assumed to be residential for purposes of the PRE; however, no residential use is planned for this site. Therefore, comparison of chemical concentrations in the various media to values protective of site resident exposure is conservative, and likely overstates risk.

Surface Soil. The levels of detected organic analytes in surface soil are below USEPA Region III residential soil concentrations, with the exception of four PAHs. The four PAHs exceed their respective USEPA Region III residential soil concentrations; each was detected in one of four samples collected. Benzo[a]anthracene was detected at a concentration of 3 µg/g; its Region III residential soil concentration is 1.6 µg/g. Benzo[a]pyrene was detected at 2 µg/g; its USEPA Region III residential soil concentration is 0.23 µg/g. Benzo[b]fluoranthene was detected at 4 µg/g; its USEPA Region III residential soil concentration is 1.9 µg/g. Indeno[1,2,3-c,d]pyrene was detected at 1 µg/g; its USEPA Region III residential soil concentration is 0.84 µg/g.

Of the 13 inorganic analytes detected above the base-wide statistical background concentrations, arsenic and beryllium were detected at concentrations above their respective USEPA Region III residential soil concentrations. The maximum detected concentration of arsenic (i.e., 38 µg/g) exceeds the base-wide background concentration of 21 µg/g. The maximum and average concentrations of beryllium, 1.18 µg/g and 0.9 µg/g, respectively, are above the base-wide background concentration of 0.347 µg/g. Inorganics were identified in the stained soil directly on top of the landfill.

Groundwater. A comparison of unfiltered groundwater concentrations to the Devens background indicated that the maximum detected concentration of every analyte exceeded background concentrations. Four of these detections were at concentrations above their respective drinking water standard or guideline. Aluminum, manganese, and iron had average concentrations (i.e., 7,118.3, 390, and 11,358.3 µg/L, respectively) that exceeded their respective USEPA secondary MCL (i.e., 50-200, 50, and 300 µg/L, respectively). The maximum detected concentration of lead (i.e., 17.7 µg/L) exceeded the lead action level of 15 µg/L; however, the average concentration (i.e., 8.8 µg/L) did not.

Filtered groundwater samples, in general, showed lower concentrations than unfiltered samples. In the four filtered samples, concentrations of aluminum, lead, and iron were below detection limits, and the concentration of manganese dropped below the secondary MCL. Based on the filtered sample data, inorganics detected in the unfiltered groundwater samples appear to have been associated with suspended solids in the samples, not landfill contamination. Therefore, groundwater at SA 13 was not believed to pose a risk to human health.

Surface Water. Two organic compounds were detected in the surface waters associated with SA 13, BEHP and nitroglycerine. BEHP, a common laboratory contaminant, was not considered to be a SA-related contaminant. Nitroglycerine was detected in one of four samples at a concentration of 38.5 µg/L. The USEPA Lifetime Health Advisory for nitroglycerine is 5 µg/L.

The concentrations of four inorganic analytes that were detected in the surface water exceed their respective drinking water standard/guideline. Aluminum, iron, and manganese were detected in the four samples collected, and each detection exceeded its respective USEPA secondary MCL. The maximum concentration of lead (i.e. 18.9 µg/L) exceeded the USEPA Region III action level of 15 µg/L.

Use of drinking water guidelines for comparison to chemical concentrations in surface water is a conservative approach used due to lack of available health-based guidelines for exposure to surface water. The magnitude and frequency of exposure to surface water associated with SA 13 is expected to be less than that upon which drinking water guidelines are based. Because exposure to surface waters in the wetlands is anticipated to be restricted to wading in the future,

it is not likely an individual would encounter concentrations that would pose a threat to the individual's health.

Sediment. Several organic contaminants were detected in sediment samples collected from the wetland area southwest of SA 13; the levels of detected organics are below USEPA Region III residential soil concentrations. Of the inorganic analytes detected in sediment, arsenic and beryllium at maximum concentrations of 22 µg/g and 2.52 µg/g, respectively, exceed their respective USEPA Region III residential soil concentrations of 0.97 µg/g and 0.4 µg/g, respectively. Concentrations of inorganics in sediment are not expected to pose a significant health risk in the sampled area because based on planned future site use, exposure to sediment would be much less than that expected in a residential setting. The use of residential soil concentrations for comparison to sediment concentrations is a conservative approach used due to a lack of available health-based guidelines.

5) AOC 40

A human health risk assessment was performed for AOC 40 to evaluate potential risks associated with exposure to site contaminants in surface soil, groundwater, and sediment.

Fish Sampling Program. Fish tissue analyses obtained through the October 1992 fish sampling program provided contaminants of potential concern (CoPC) concentrations in fish. The health risks faced by a recreational fisherman or family member who consumes fish from Cold Spring Brook Pond fell within the USEPA target risk range of 1×10^{-6} to 1×10^{-4}. The maximum detected concentrations of mercury, 2,2, bis(para-chlorophenyl)-1,1-dichloroethene (DDE), and DDD in fish at Cold Spring Brook Pond were also below their respective U.S. Food and Drug Administration action levels.

Surface Soil. The health risks associated with contact with surface soil at Cold Spring Brook Landfill are below the USEPA cancer risk guidance value of 1×10^{-6} and target HI of 1. Under current land use conditions, an adult and child are assumed to be exposed to soil by dermal contact and incidental ingestion five days per year for 30 and 5 years, respectively. The health risks associated with surface soil exposure under future assumed residential conditions (350

days/year) are within the USEPA carcinogenic guidance range of 1 x 10^{-6} to l x10^{-4}, and below the noncancer HI of 1.

Groundwater. Cancer risks associated with future residential use of unfiltered groundwater exceeded the USEPA points of departure and USEPA target risk range. Arsenic accounted for approximately 99 percent of the total risk. The cancer slope factor for inorganic arsenic may overestimate true cancer risk by as much as an order of magnitude relative to risk estimates associated with most other carcinogens. Two additional analytes, BEHP and manganese, presented risks above the points of departure. The hazard quotients (HQs) for manganese ranged from 16 to 37. BEHP presented cancer risks slightly above the point of departure (at 6.5x10^{-6}). BEHP is a common laboratory contaminant and it is possible that the BEHP reported in AOC 40 samples resulted from laboratory contamination.

Although these risks are above USEPA guidance values, they were estimated based on residential exposure to groundwater under future land use conditions. However, no residential use of the site is planned. Therefore, comparison of chemical concentrations in the various media to values protective of site resident exposure is conservative, and likely overstates risk. Because there is no residential groundwater exposure under current land use conditions, there is no associated carcinogenic risk. Noncancer risks associated with manganese in drinking water may be overestimated due to the uncertainty and limitations of the single epidemiological study upon which the reference dose (RfD) for manganese is based.

Maximum detected contaminant concentrations from the March and June 1993 sampling rounds showed aluminum, iron, and manganese exceeding their Secondary MCLs. Federal and state guidelines for sodium in drinking water were also exceeded. The primary MCL for BEHP of 6 µg/L was exceeded by its maximum detected concentration of 14 µg/L; the average concentration of 4 µg/L was below the MCL.

Surface Water. During the RI, risks were calculated based on the scenario of incidental ingestion of surface water while fishing in Cold Spring Brook Pond. This exposure route did not present health risks above the Superfund points of departure. Although not evaluated as a potential exposure pathway in the risk assessment, health risks from contact with the pond

surface water while swimming were expected to be low. A comparison of the average and maximum concentrations of analytes in surface water to drinking water standards and guidelines showed the detected concentrations of all compounds except iron and manganese to be below standards. Because iron has a relatively low toxicity for humans, and the average concentration of manganese is below its MCL goal, health risks are expected to be low.

Sediment. Direct contact with sediment results in cancer risks within the USEPA target risk range of $1x10^{-6}$ to $1x10^{-4}$ for both current and future land use conditions.

The health risks from lead in Cold Spring Brook Pond sediment could not be estimated quantitatively; however, the concentrations of lead in sediment were evaluated using the USEPA interim soil cleanup level for lead in residential settings of 400 µg/g. Although the maximum detected concentration of lead in Cold Spring Brook Pond sediment was above the soil lead cleanup level, the average concentration was below the soil lead cleanup level. Exposure to lead in sediment was also predicted to be less than in a residential setting. Therefore, lead in sediment was not predicted to pose a significant health risk.

6) AOC 41

A human health PRE was conducted to evaluate potential human health risks associated with exposure to site contaminants in surface soil, groundwater, surface water, and sediment. Investigation of groundwater contamination at AOC 41 was conducted under a separate operable unit from that of the other media. The RI for AOC 41 focused on the groundwater operable unit only; however, test pits were completed in the waste material to determine whether the waste is a source of groundwater contamination. Data from collected soil samples indicated that the waste material is not the source of groundwater contamination. Because groundwater contamination is being addressed as a separate operable unit and is not related to debris, only the potential human health risks associated with exposure to site contaminants in surface soil, surface water, and sediment are summarized. For purposes of the PRE, it was assumed that future use of AOC 41 would be residential. The Army is retaining property on Devens' South Post, and there are no plans to develop residences at AOC 41. Therefore, comparison of chemical concentrations in site

media to values considered protective of site resident exposure is conservative, and likely overstates risk.

Surface Soil. Surface soil samples at AOC 41 were collected from areas of stained soils and from shallow soil depths. The levels of detected organic analytes in surface soil were below the USEPA Region III residential soil concentrations, with the exception of benzo[a]pyrene, benzo[a]anthracene, benzo[b]fluoranthene and indeno[1,2,3-c,d]pyrene. The maximum detected concentration of benzo[a]pyrene (2.0 µg/g) exceeds the USEPA Region III residential soil concentration of 0.23 µg/g. Benzo[a]pyrene was detected in two of ten samples collected. Indono[1.2.3-c,d]pyrene was detected in one of ten samples at a concentration of 1 µg/g, exceeding the USEPA Region III residential soil concentration of 0.84 µg/g. While the maximum detected concentrations of benzo(a)anthracene (2 µg/g) and benzo[b]fluoranthene (2 µg/g) exceed their USEPA Region III residential soil concentrations of 1.6 µg/g and 1.9 µg/g respectively, their average concentrations do not.

Inorganic contamination exists in AOC 41 surface soil, particularly in the stained soils directly on top of the waste material. Of the twelve inorganic analytes detected above established background concentrations, two analytes were detected at concentrations above their respective health-based soil guideline. Beryllium was detected (maximum: 2.2 µg/g) above USEPA Region III's residential soil concentration of 0.4 µg/g. The USEPA Superfund lead cleanup level of 500 µg/g was exceeded (maximum detection: 1,400 µg/g) at two of ten sampling locations. Arsenic was detected at concentrations above the USEPA Region III residential soil concentration of 0.36 µg/g. Arsenic was detected (maximum detection: 14.0 µg/g) above the residential soil concentration, but the maximum detected concentration did not exceed the established background concentration for arsenic of 21 µg/g. Based on this screening-level analysis, beryllium and lead at the reported sampling locations may pose a potential risk to human health if the site were to be developed for residential use. However, no plans exist for residential use of the site.

Three surface soil samples were collected from the low area at the base of the waste material. Several PAHs, acetone, di-n-butylphthalate, and Arochlor 1260 were detected in the samples. Five of the PAHs, each detected in one of four samples, exceeded either the USEPA Region III

residential soil concentrations and/or the MCP S-2/GW-1 soil standard. Arochlor 1260 was detected in all four samples at concentrations above the residential soil concentration but below the MCP S-2/GS-1 soil standard. Arsenic was detected above health screening guidelines; however, the concentration is below the basewide background level of 21 µg/g. Based on these comparisons, PAHs present a potential risk under a residential setting. However, no plans exist for residential use of the site.

Surface Water. Two organic compounds, toluene and dichloroethane (DCA) were detected in surface waters associated with AOC 41. The maximum concentrations of both were below their respective primary drinking water MCLs.

The concentrations of four inorganic analytes that were detected in the surface water exceed their respective drinking water standard/guideline. The average concentration of lead (i.e., 21.7 µg/L) detected in New Cranberry Pond exceeds the USEPA lead action level of 15 µg/L. Aluminum, iron, and manganese were detected (maximum concentrations of 8,100, 16,400, and 976 µg/L, respectively) in all samples collected and each exceeded its respective USEPA secondary MCL (i.e., 50-200, 300, and 50 µg/L, respectively). Use of drinking water guidelines for comparison to surface water concentrations is a conservative approach due to lack of available health-based guidelines for exposure to surface water. Because exposure to surface water is expected to be restricted, it is unlikely that contaminants would pose a significant threat to public health.

Sediment. Several organic analytes were detected in sediment samples: pesticide residues, acetone, chloroform, and Arochlor 1260. Acetone and chloroform are common laboratory contaminants and were not considered to be site-related. The levels of all pesticide residues detected in sediment were below the USEPA Region III residential soil concentrations and MCP S-2/GW-1 soil standards. The concentration of Arochlor 1260 (i.e., 0.316 µg/g) exceeded the Region III residential soil concentration of 0.083 µg/g, but not the MCP S-2/GW-1 soil standard.

Of the inorganic analytes detected in sediment, arsenic (maximum detection of 13.5 µg/g) exceeded its USEPA Region III residential soil concentration (i.e., 0.36 µg/g) but not the MCP S-2/GW-1 soil standard. Concentrations of contaminants detected in sediment are not expected

to pose a significant health risk in the sampled area because exposure to sediment in this area would be less than expected in a residential setting.

B. ENVIRONMENTAL RISKS

1) AOC 9

An ecological PRE was conducted to evaluate potential ecological risks associated with exposure to site contaminants in AOC 9 surface soil, surface water, and sediment.

Surface Soil. The inorganic analytes copper, lead, and nickel were detected above background in two surface soil samples taken from test pits on the AOC 9 landfill. A screening-level evaluation of the potential effects from surface soil exposure was conducted by comparing the maximum concentrations of these contaminants to their respective protective contaminant levels (PCLs). The maximum concentrations of copper and nickel were less than their respective PCLs, and the maximum concentration of lead was greater than the PCL, which was established to be the background concentration.

Although lead exceeded the PCL, it was not considered to pose ecological risks to terrestrial receptors at the site for several reasons: (1) the maximum lead concentration is less than twice the background value; (2) areas of unvegetated terrestrial habitat, that are unsuitable for foraging, exist at the AOC 9 landfill; and (3) PCLs derived for other receptors are at least an order of magnitude above the detected lead concentrations at AOC 9.

Surface Water. Several inorganic compounds were detected and chosen as COCs from three surface water samples taken from wetlands located to the southeast of the AOC 9 landfill. Risks to aquatic receptors in wetlands surface water were evaluated through direct comparison of maximum concentrations to aquatic benchmark values. Concentrations of aluminum, lead, and iron detected above Federal Ambient Water Quality Criteria (AWQC) were most likely reflective of background conditions rather than landfill-related conditions. Concentrations of aluminum and lead, although above the chronic AWQC, were lower than the acute AWQC. In addition, a review of AWQC documents indicated that early life stages of trout are among the most sensitive

ecological receptors. Because the site's ecological receptors are likely to be more tolerant of contamination, it is unlikely that the low levels of contamination in surface water will have an adverse effect on receptors.

Sediment. Maximum lead and arsenic concentrations in wetlands sediments exceeded the screening level benchmark toxicity values. The average lead concentration is identical to the New York State Department of Environmental Conservation (NYSDEC) sediment quality guideline and less than the National Oceanic and Atmospheric Administration (NOAA) effects range-low (ER-L) value. Therefore, lead is not considered to be causing significant ecological risk at AOC 9. The average arsenic concentration is greater than the NYSDEC sediment quality guideline, and considerably less than the ER-L of NOAA. Therefore, arsenic is not considered to be causing significant ecological risk at AOC 9.

2) AOC 11

An ecological risk assessment was conducted to evaluate potential ecological risks associated with exposure to contaminants in AOC 11 surface soil, surface water, and sediment.

Surface Soil. Exposure risks are expected to be moderate for cadmium and high for lead from dietary exposures in the AOC 11 disposal area. These risks, however, are based on conservative scenarios of restricted foraging entirely within the 2-acre habitat found on the debris disposal area surface, and are therefore, likely overestimated. Maximum debris disposal area soil exposure risks are expected to be low for other COCs, essentially identical to those for the Devens' soil background.

Surface Water. Surface water risks associated with the Northern and Southern wetlands, are elevated due to the presence of metals and pesticides, although the wetlands do not appear to have been functionally impaired and do not exhibit obvious stress symptoms. Surface water risks associated with the Nashua River are insignificant and do not increase adjacent to or downstream of AOC 11.

The results of toxicity tests performed on the downstream wetlands indicated that wetlands surface water samples are not toxic to test organisms. Similar tests revealed the same results in samples collected from the upstream wetlands. These test results failed to indicate toxicity strictly associated with AOC 11 wetland surface waters.

Sediment. Both AOC 11 wetlands exhibit high average and maximum, noncarcinogenic sediment risks for metals and pesticides, with pesticides accounting for most of the risk. However, with the exception of the maximum detected levels of a few COCs, most of the wetland risks do not significantly exceed those observed in the upstream reference wetland located within the same, western floodplain as the AOC 11 wetlands. This information suggests that the contamination is likely reflecting historical and continuing inputs from over-bank flooding by the Nashua River rather than current site conditions. The results of toxicity tests indicate that, in general, wetlands sediment samples are not toxic to most of the test organisms. The tests fail to indicate any toxicity that was strictly associated with the AOC 11 wetlands.

Most of the aquatic ecological risks in the Nashua River are attributed to sediment contamination with metals and pesticides. Significant incremental risk increases occur in river sediments adjacent to AOC 11 for several metals and pesticides. Since these increases do not appear to be related to current surface water influx of suspended sediments from AOC 11 wetlands to the river, the increase may be due to historical sediment releases from the wetlands during infrequent high-flow events and/or subsurface migration of inorganics via groundwater flow from the AOC 11 refuse area. The occurrences may also reflect local variation in contaminant concentrations along the entire length of the Nashua River.

Elevated risk levels in the AOC 11 wetlands are not clearly attributed, at least solely, to contaminants derived from AOC 11. Rather, periodic over-bank flooding of the Nashua River appears to have contributed a portion of metal and pesticide contamination found in both the AOC 11 and upstream wetlands, while the wetlands appear to be retarding contamination influx to the Nashua River.

3) SA 12

An ecological PRE was conducted to evaluate potential ecological risks associated with exposure to contaminants in SA 12 surface soil, sediment, and surface water.

Surface Soil. The maximum concentrations of barium, lead, zinc, and Arochlor 1254 exceeded their respective surface soil benchmark values used for the screening-level evaluation. The maximum detected concentration of lead was approximately 18 times its benchmark value. Arochlor 1254, detected in one sample, was approximately twice the benchmark value established for this PCB. The maximum barium and zinc concentrations were approximately 4 and 6 times their respective surface soil benchmark values. This information suggests possible adverse effects to ecological receptors from surface soil contamination in the landfill area.

Surface Water. Risks to aquatic receptors in wetlands surface waters were evaluated through comparison of maximum concentrations to aquatic benchmark values. The maximum concentrations of aluminum, chromium, copper, iron, lead, and zinc in SA 12 floodplain surface water exceeded respective aquatic benchmark values. Generally, the USEPA chronic AWQC was used as the benchmark value. The maximum detected concentration of aluminum was approximately 13 times the chronic AWQC and the maximum detected concentration of iron was approximately 74 times the chronic AWQC. Maximum concentrations of chromium, copper, lead, and zinc were several times higher than their respective aquatic benchmark values. These values suggest possible adverse effects to ecological receptors from surface water contamination; however, the concentrations of inorganics detected in Nashua River surface waters are most likely representative of background surface water conditions and are not site related.

Sediment. The pesticides DDD and DDE were both detected at concentrations approximately an order of magnitude greater than their total organic carbon (TOC)-normalized benchmark values. Arochlor 1248 and BEHP were detected at maximum concentrations that were approximately twice their respective sediment benchmark values.

The maximum concentrations of 11 inorganic and four organic analytes in floodplain sediments exceeded their respective sediment benchmark values. Antimony, arsenic, cadmium, chromium,

copper, iron, lead, mercury, nickel, silver, and zinc in wetlands sediment were detected at levels greater than their sediment benchmark values. The maximum detected concentration of arsenic was approximately 15 times its benchmark value, while cadmium was detected at approximately 270 times its benchmark value. The maximum detected concentration of chromium was approximately 13 times its benchmark value and the maximum concentration of copper was approximately 27 times its benchmark value. Lead and mercury were both detected at maximum concentrations approximately 30 times sediment benchmark values. Maximum concentrations of the inorganic analytes in the Nashua River floodplain sediment may be the most significant contributors to ecological risk in the vicinity of SA 12; however, these concentrations are most likely representative of Nashua River surface water conditions and are not site related.

4) SA 13

An ecological PRE was conducted to evaluate potential ecological risks associated with exposure to contaminants in SA 13 surface soil, surface water, and sediment.

Surface Soil. A screening-level evaluation of potential effects from surface soil exposure was conducted by comparing the maximum concentrations of COCs to their respective surface soil benchmark values. No organic analytes at SA 13 were found to exceed their ecological benchmark values; however, the maximum concentrations of arsenic, barium, beryllium, cadmium, lead, and selenium were greater than their respective surface soil benchmarks. The maximum concentrations of arsenic, barium, beryllium, cadmium, and selenium were slightly higher than their respective benchmark values, and therefore were not considered a significant ecological risk.

The maximum lead concentration was approximately 6.5 times greater than the benchmark for lead in surface soils, and the average lead concentration was approximately twice the benchmark value. These concentration of lead may pose a risk to certain ecological receptors.

Surface Water. Risks to aquatic receptors in surface water were evaluated through comparison of maximum concentrations to USEPA chronic AWQC. The maximum concentration of aluminum exceeded the acute and chronic AWQC, while iron and lead exceeded only the chronic

AWQC. Because these compounds were present at high levels in background soils and groundwater at Devens, their presence in SA 13 surface water may be reflective of background conditions, and not of landfill impacts. Furthermore, a review of AWQC documents indicated that the ecological receptors upon which the guidance levels are based were among the most sensitive. It is unlikely that the levels of aluminum, iron, and lead in surface water will have an adverse effect on the site's ecological receptors, which are likely to be more tolerant than the risk targeted receptor.

Mercury was detected in one of the three surface water samples in addition to the duplicate sample. The maximum concentration was less than the acute AWQC, but approximately an order of magnitude greater than the chronic AWQC. The presence of mercury in SA 13 surface water may pose a threat to ecological receptors.

Sediment. Risks to ecological receptors from sediments were evaluated through comparison of maximum concentrations to sediment benchmark values. Maximum lead, copper, arsenic, DDE, gamma-chlordane, and heptachlor concentrations exceeded the screening level benchmark toxicity values. The average lead concentration was lower than the NYSDEC sediment quality guideline and the ER-L of NOAA. The average concentrations of arsenic and copper were slightly greater than the NYSDEC sediment quality guidelines, and considerably less than their respective NOAA ER-L. Therefore, lead, copper, and arsenic were not considered to be causing significant ecological risk in SA 13 sediments.

The maximum DDE concentration is approximately twice the TOC-normalized USEPA Sediment Quality Criteria (SQC) and approximately an order of magnitude greater than the NOAA ER-L. Heptachlor and gamma-chlordane are also present at concentrations at least an order of magnitude greater than their respective sediment benchmark values. These compounds may be causing significant risks to ecological receptors.

5) AOC 40

An ecological risk assessment was performed to determine whether environmental contaminants may pose a risk to ecological receptors at AOC 40. The risk assessment indicated that sediment

contamination in Cold Spring Brook Pond may pose a risk to ecological receptors. Arsenic was found to be the primary risk contributor to aquatic and semi-aquatic biota. Risks to aquatic biota were predicted from DDD.

Fish Sampling Program. Average and maximum fish tissue analyte concentrations of fish collected from Cold Spring Brook Pond were compared to regional and national data bases by trophic level. The average fish tissue concentration from Cold Spring Brook Pond exceeded regional averages for the following analytes; DDE, iron, manganese, and zinc. The maximum Cold Spring Brook Pond whole body chain pickerel concentrations of mercury and zinc exceeded their respective National Contaminant Biomonitoring Program 85th percentile concentrations. Fish body weight (and concomitantly trophic status) appears to be a good predictor of mercury contaminant burden in Cold Spring Brook Pond, with higher trophic level fish species having accumulated higher concentrations of this analyte.

A total of 95 fish representing five families and six species were collected in Cold Spring Brook Pond. A gross pathological examination of the fish suggested that the individuals from the population examined were healthy. No tumors, lesions, or other significant abnormalities were observed in any fish examined.

Macroinvertebrates. The macroinvertebrate program at Cold Spring Brook Pond was designed to provide baseline information regarding the biota associated with aquatic habitats in the vicinity of the landfill. The macroinvertebrate community data suggested that Cold Spring Brook Pond may be unimpacted or slightly impacted. Within Cold Spring Brook Pond, sampling stations located adjacent to the landfill appeared to have lower diversity and abundance of aquatic macroinvertebrates than the station located furthest from the landfill. However, water quality parameters did not appear to be influencing factors in the differences observed. A statistical analysis, although generally inconclusive, did suggest that a group of approximately 15 inorganic compounds of potential concern may collectively impact the macroinvertebrate community adversely.

Surface Soils. Based on a review of field sampling data collected during the RI, risks to upland terrestrial wildlife from surface soils were not calculated. The review indicated a lack of significant soil contamination.

Surface Water. The average Cold Spring Brook Pond surface water concentrations of iron and manganese slightly exceeded their respective chronic AWQC values. Under the reasonable maximum exposure (RME) scenario, the maximum concentrations of copper and zinc exceeded their respective acute AWQC values. For both the average exposure and RME scenarios at Cold Spring Brook Pond, no HQs were greater than 1for any of the eight evaluated semi-aquatic receptor species.

In the absence of site-specific information regarding bioavailability and toxicity, literature sources were used to establish a range of candidate arsenic and lead preliminary remediation goals (PRGs) for this site. PRG determination for arsenic and lead in sediment was documented in the AOC 40 Final Feasibility Study Report. The AOC 40 FS Report recommended sediment removal at two hot spots (Areas I and II) at Cold Spring Brook Pond.

Sediment. Concentrations of DDD, DDE, DDT, anthracene, arsenic, barium, iron, lead, manganese, mercury, nickel, silver, and zinc exceeded the available sediment quality criteria and guidelines. Review of the derivation of the USEPA sediment quality criteria for DDD, DDE, and DDT indicates, however, that the criteria are based on fish lipid values that are not representative of fish living in Cold Spring Brook Pond. Because of this, the sediment quality criteria were adjusted to represent more realistic site-specific conditions. Use of the adjusted pesticide sediment quality criteria HQ eliminates the risk from DDE for the average exposure scenario and lowers risks from DDD for RME scenarios.

6) AOC 41

An ecological PRE was conducted to evaluate potential ecological risks associated with exposure to contaminants in AOC 41 surface soil, surface water, and sediment.

Surface Soil. No organic compounds in surface soil exceeded established benchmark values; however, the maximum detected concentrations of the inorganics antimony, barium, beryllium, cadmium, copper, lead, and zinc did exceed their respective benchmark values. These maximum concentrations were associated primarily with samples collected from the landfill surface.

Subsequent to the Final SI, three surface soil samples were collected downgradient of the landfill. With the exception of cobalt, for which no background data are available, the maximum concentrations of all inorganics were less than background concentrations. In addition to inorganics, 16 organic compounds, including 13 PAHs and a PCB, were detected in additional soil samples. A screening-level evaluation of potential effects from surface soil exposure was conducted in which no surface soil benchmark values were exceeded by the maximum detected concentrations of contaminants.

Although several analytes associated with surface soil samples collected during the SI exceeded ecological benchmark values, ecological risks are likely to be minimal. Elevated analyte concentrations were generally associated with samples taken directly from the landfill, and contaminated surface soils do not appear to pose a risk to ecological receptors elsewhere at AOC 41.

Surface Water. The results from two surface water samples collected during the Supplemental SI were combined with surface water sample data from the Final SI. Two organic compounds, DCA and toluene, were detected but are believed to be laboratory contaminants, and not site related. The maximum concentrations of aluminum, copper, iron, lead, and zinc exceeded their benchmark values. Concentrations ranged from two to 93 times the benchmark values.

Although the inorganic analytes exceeded surface water screening values, the maximum concentrations of these compounds were all detected in one sample. Additionally, copper and zinc were undetected in all other surface water samples. It is believed that aluminum and iron were present at naturally high levels in background soils and groundwater at Devens, and the presence of these analytes may be reflective of background conditions, rather than landfill impacts. Furthermore, AWQC documents indicate that standards are based on ecological receptors that are more sensitive than those likely to occur in AOC 41 wetlands. Lastly, it is

likely that the use of unfiltered surface water samples lead to unrepresentatively high levels of inorganics due to contamination entrained on suspended solids. It is highly unlikely that the elevated levels of contaminants detected will have an adverse effect on potential ecological receptors.

Sediment. During the Supplemental SI, two sediment samples were collected at AOC 41 and the data combined with sediment sample data from the Final SI. Seven organic compounds and 11 inorganic analytes were detected in sediment samples.

The maximum concentrations of DDD, DDE, heptachlor, arsenic, lead, and zinc were the only values identified above their respective benchmark values. Arsenic was detected in all samples at a maximum concentration over twice its benchmark value. Lead was detected in both samples at a maximum concentration approximately 1.5 times its benchmark value. The maximum concentrations of zinc and heptachlor slightly exceeded their benchmarks.

The maximum concentration of the compounds were detected in one sediment sample. The average concentrations of all three inorganic analytes were at or near the benchmark values, indicating that it is unlikely that arsenic, lead, and zinc pose an ecological risk to aquatic receptors. Additionally, the Interim SQC for DDT and its breakdown products likely represents a conservative guideline for use at Devens. Therefore, it is unlikely that these pesticides in New Cranberry Pond sediments pose a risk to ecological receptors.

VII. DEVELOPMENT AND SCREENING OF ALTERNATIVES

A. Statutory Requirements/Responses Objectives

Under its legal authorities, the Army's primary responsibility at Superfund sites is to undertake remedial actions that are protective of human health and the environment. In addition, Section 121 of CERCLA establishes several other statutory requirements and preferences, including: a requirement that the remedial action, when complete, must comply with all federal and more stringent state environmental standards, requirements, criteria, or limitations, unless a waiver is

invoked; a requirement that a remedial action be cost-effective and use permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable; and a preference for remedies in which treatment permanently and significantly reduces the toxicity, mobility, or volume of hazardous substances as a principal element. Response alternatives were developed to be consistent with these Congressional mandates.

Based on preliminary information relating to types of contaminants, environmental media of concern, and potential exposure pathways, remedial response objectives were developed to aid in the development and screening of alternatives. These remedial response objectives were developed to mitigate existing and future potential threats to human health and the environment. The response objectives are:

- Prevent human exposure to groundwater contaminants released from Devens landfills that exceed acceptable risk thresholds.
- Protect human and ecological receptors from exposure to landfill soils having concentrations of contaminants exceeding acceptable risk thresholds.
- Prevent landfill contaminant releases to surface water that result in exceedance of AWQC or acceptable ecological risk-based thresholds.
- Prevent exposure by ecological receptors to landfill-contaminated sediments exceeding acceptable risk-based thresholds.
- Reduce adverse impacts from contaminated landfill media to the environment that would reduce the amount of land area available for natural resources use.
- Support the civilian redevelopment effort at Devens.

B. Technology and Alternative Development and Screening

CERCLA and the National Contingency Plan (NCP) set forth the process by which remedial actions are evaluated and selected. In accordance with these requirements, a range of alternatives were developed for SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. The NCP reaffirms CERCLA's preference for permanent solutions that is treatment technologies to reduce toxicity, mobility, and volume of hazardous substances to the maximum extent practical.

Experience with remediation of solid waste landfill sites has prompted USEPA to encourage solutions that vary from those preferred for CERCLA sites containing hazardous wastes. The agency recognizes that excavation and treatment or removal of large solid waste landfills is impractical, and not cost-effective. USEPA's directive *Application of the CERCLA Municipal Landfill Presumptive Remedy to Military Landfills* promotes containment (and discourages waste excavation and removal) for larger landfills. The guidance does recognize excavation and consolidation as viable alternatives, on a site-specific basis.

Both AOC 9 and AOC 40 meet the directive's definition of a larger landfill. At the request of the USEPA New England and the MADEP, the Army developed alternatives that include excavation and removal of wastes at AOCs 9 and 40. The inclusion of these alternatives also accommodated the Devens redevelopment authority's preference for debris removal. At AOC 9, planned increased use of the nearby wastewater plant could result in adverse effects from the landfill on the environment. Groundwater modeling indicates that groundwater from AOC 40 could migrate toward the Patton drinking water supply well if the well was pumped continuously near its permitted capacity.

The following paragraphs describe, in chronological order, evolution of the remedial alternatives considered for landfill remediation.

Plan of Action (March 1995). The Base Realignment and Closure (BRAC) Cleanup Team's Plan of Action (BCT, 1995) constituted an agreement to proceed with plans for consolidating debris from the seven disposal areas into a single disposal site. The Plan was endorsed by the Fort Devens BRAC Environmental Coordinator, USEPA Region I, Massachusetts Department of Environmental Protection (MADEP), and the Massachusetts Government Land Bank. The Plan of Action considered six debris management options, each comprised of one or more of the following actions: (1) debris consolidation to a single on-site disposal area, (2) capping of debris disposal areas in-place, and (3) debris disposal at an offsite commercial facility. Of these, Plan of Action proponents favored excavating debris from all seven areas and consolidating the debris at a vacant parcel of land east of Shepley's Hill Landfill, if the action was determined to be cost-effective.

Landfill Consolidation Feasibility Study Report (September 1995). The Landfill Consolidation FS report evaluated in detail the excavation/consolidation option endorsed in the Plan of Action. Review comments on the FS report from the U.S. Army Forces Command (FORSCOM) caused the Plan of Action proponents to reconsider the evaluation process from which landfill consolidation was selected. FORSCOM requested further evaluation of non-consolidation options such as capping disposal areas in-place or no further action.

Landfill Remediation Feasibility Study Report (January 1997). The Landfill Remediation Feasibility Study Report (ABB-ES, 1997) evaluated alternatives that included fifteen combinations of the following remedial actions: (1) no further action under CERCLA, (2) limited surface debris removal, (3) containment (i.e., capping-in-place), and (4) excavation and consolidation of debris at a proposed landfill near Shepley's Hill. Section 6 of the FS report identified, assessed, and screened technologies and process options based on effectiveness and implementability. The technologies and process options were combined into the 15 candidate alternatives. The alternatives were evaluated and screened in Section 7 of the FS report. Screening was based on the criteria of effectiveness, implementability, and cost, as described in Section 300.430(e)(4) of the NCP. From the screening process, nine remedial alternatives (i.e., Alternative 1 through Alternative 9) were evaluated in detail in Section 8 of the FS Report.

Proposed Plan (December 1997). During preparation of the initial Proposed Plan, discussions took place among the Army, USEPA, and MADEP regarding the appropriateness of the nine remedial alternatives evaluated in the FS Report. During the discussions, a tenth alternative, similar to Alternative 4, was evaluated. The option is called Alternative 4a, described in Section VIII of this ROD.

In the December 1997 Proposed Plan, the Army recommended implementation of Alternative 4a. During the public comment period, area residents voiced strong opposition to the location of the alternative's proposed consolidation landfill near the existing Shepley's Hill Landfill. The community favored debris excavation, including complete debris removal at AOC 11, and disposal in an offsite landfill. In response, the Army agreed to: (1) further evaluate the feasibility of disposing debris offsite, and (2) expand the site search for an onsite consolidation landfill, using criteria derived from public comments and from consideration of construction ease.

Offsite debris disposal (Spring/Summer, 1998). On April 1, 1998, the Army placed a notice in the Commerce Business Daily. The notice requested interested waste disposal contractors to submit a preliminary approach and cost estimate for disposing landfill debris at an offsite, commercial landfill using rail transport. The responses to the inquiry contained information with a level of detail comparable to that found in the CERCLA Feasibility Study Report that evaluated onsite consolidation.

During a series of meetings with the USEPA, MADEP, the Devens Commerce Center, and community officials and residents, the Army presented responses received from the Commerce Business Daily (CBD) inquiry. After careful review of contractor responses, the Army concluded that landfill cleanup with offsite disposal would be significantly more costly than cleanup with an onsite consolidation landfill. However, waste disposal contractors indicated that their preliminary cost estimates for offsite debris disposal could be reduced, were the Army to solicit response to a formal Request for Bids. Members of the community continued to indicate a preference for offsite debris disposal.

Expanded onsite landfill site search (Spring/Summer 1998). The Army re-evaluated potential landfill sites originally considered, plus several others, using "non-regulatory" criteria derived from public comment. As a result of the re-evaluation, the Army selected the former Driving Range (Figure 9) as the preferred site for a consolidation landfill. The site meets MADEP's regulatory criteria for landfill location, and more closely meets "non-regulatory" criteria than do the other sites considered. The former Driving Range:

- Is not located within a mapped potentially-productive aquifer;
- Is not located within Zone II protective boundary of a water supply well;
- Is screened from view from abutting property by existing trees;
- Offers minimal truck hauling impact on the community during landfill construction;
- Is located nearly a mile from the nearest private residence;
- Is located over a half-mile from the nearest school; and
- Would not impact proposed use of adjacent properties.

Responding to a suggestion made by community leaders, the Army formed an eleventh alternative, Alternative 4b, described in Section VIII of this ROD. Under Alternative 4b, the Army would request formal contractor bids for both offsite and onsite debris disposal. One of the two disposal options would be selected upon review of the bids, based on best value.

Responding to comments provided by the USEPA, MADEP, the U.S. Fish and Wildlife Service, and community leaders, the Army formed a twelfth alternative, Alternative 4c, described in Section VIII of this ROD. Alternative 4c is similar to Alternative 4b, except that full debris removal would occur at AOC 11. Alternatives 4a, 4b, and 4c were evaluated in detail in the FS Addendum Report.

Landfill Remediation Feasibility Study Addendum Report (November 1998). The Addendum Report (HLA, 1998) described and evaluated Alternatives 4a, 4b, and 4c in conformance with CERCLA guidance.

Proposed Plan S December 1998. In the second Proposed Plan, the Army described its selection of Alternative 4c as the preferred option for landfill remediation. Alternative 4c is described in Section VIII of this ROD.

VIII. DESCRIPTION OF ALTERNATIVES

This section provides a summary of the detailed evaluations performed on Alternatives 1 through 9 in the FS Report, and Alternatives 4a, 4b, and 4c in the FS Addendum Report. A summary of the alternatives is shown in Table 2.

TABLE 2 ALTERNATIVE DESCRIPTION SUMMARY

Remedial Alternative No.	Alternative Description
1	No Further Action: All seven landfills
2	Cap in Place: AOCS 9, 40 Limited Removal: AOC 11, SA13 No Further Action: SAs 6, 12, AOC 41
3	Cap in Place AOCs 9, 11, 40 No Further Action: SAs 6, 12, 13, AOC 41
4	Excavate/Consolidate: AOCs 9, 40 Limited Removal: AOC 11 No Further Action: SAs 6, 12, 13, AOC 41
4a	Excavate/Consolidate Onsite: SA 13, AOCs 9, 40 Limited Removal: AOC 11, SA 12, AOC41 No Further Action: SA 6
4b	Excavate Consolidate Onsite, or Transport and Dispose Offsite: SA13, AOCs 9 and 40 Limited Removal: AOC 11, SA 12, AOC 41 No Further Action: SA 6
4c	Excavate/Consolidate Onsite, or Transport and Dispose Offsite: SA13, AOCs 9, 11, and 40 Limited Removal: SA 12, AOC 41 No Further Action: SA 6
5	Excavate/Consolidate: AOCs 9, 40 Cap in Place: SAs 6, 12, 13, AOC 41 Limited Removal: AOC 11
6	Excavate/Consolidate: AOCs 9, 11, 40 Cap in Place: SAs 6, 12, 13, AOC 41
7	Cap in Place: All seven landfills
8	Excavate/Consolidate: SAs 6, 12, 13, AOCs 9, 40, 41 Limited Action: AOC 11
9	Excavate/Consolidate: All seven landfills

Note: Financial cost estimates for each of the alternatives in this table are presented in Section IX, Table 3 of this ROD.

Army's Preferred Alternative

A. Alternative 1: No CERCLA action at all seven landfills

The No Action alternative serves as a baseline with which to compare the other remedial alternatives. No CERCLA action would be taken at any of the landfills to reduce or control potential risks. The No Action alternative has no capital or operation and maintenance (O&M) costs.

B. Alternative 2: No CERCLA action at SAs 6, 12, and 13, and AOC 41; limited debris removal at AOC 11 (disposal at AOC 9); and cap-in-place debris at AOCs 9 and 40

Note: Prior to preparing the December 1997 Proposed Plan, the Army modified Alternative 2 to include limited debris removal at SA 13.

Alternative 2 includes three debris management approaches for the seven landfills. At SAs 6 and 12, and AOC 41, no action would be taken. At SA 13 and AOC 11, surface debris would be removed for disposal at AOC 9. At AOCs 9 and 40, a cap would be placed over the debris. AOC 9 will have some consolidation of debris, which would minimize the area to be capped and associated costs. The debris collected from SA 13 and AOC 11 would be placed under this cap. Alternative 2 includes removing exposed drums at AOC 40 to remove a potential source of contamination, and excavation of sediment from two hot spots in Cold Spring Brook Pond to reduce ecological risk from contamination exposure.

Key components of Alternative 2 include:

<u>No CERCLA Action at SAs 6 and 12 and AOC 41</u>

- No action.

<u>Limited Debris Removal at SA 13 and AOC 11</u>

- Mobilization/demobilization;
- Removal of debris, and transportation to AOC 9;

- Backfilling site; and
- Site restoration.

Cap-in-Place AOCs 9 and 40

- Mobilization/demobilization;
- Site preparation;
- AOC 40 Sediment removal, with disposal at AOC 9;
- AOC 40 Drum removal, with disposal at AOC 9;
- Consolidate debris at AOC 9;
- Cap construction;
- Site restoration;
- Wetland restoration;
- Institutional controls;
- Cover system monitoring and maintenance; and
- Five-year site reviews.

Total Capital Cost:	$6,633,000
O&M Costs (present worth):	$ 953,000
Total Cost:	$7,586,000

C. Alternative 3: No CERCLA action at SAs 6, 12, and 13, and AOC 41; cap-in-place debris at AOCs 9, 11, and 40

Alternative 3 includes two debris management approaches for the seven landfills. At SAs 6, 12, and 13, and AOC 41, is no action would be taken. At AOCs 9, 11, and 40, a cap would be placed over the debris. AOC 9 would have some consolidation of debris to minimize the size of the cap. Alternative 3 includes removing exposed drums at AOC 40 to remove a potential source of contamination, and excavation of sediment from two hot spots in Cold Spring Brook Pond to reduce ecological risk from contamination exposure.

Key components of Alternative 3 include:

No CERCLA Action at SAs 6, 12, and 13, and AOC 41

- No action.

Cap-in-Place AOCs 9, 11, and 40

- Mobilization/demobilization;
- Site preparation;
- AOC 40 Sediment removal, with disposal at AOC 9;
- AOC 40 Drum removal, with disposal at AOC 9;
- Consolidate debris at AOC 9;
- Cap construction;
- Site restoration;
- Wetland restoration;
- Institutional controls;
- Cover system monitoring and maintenance; and
- Five-year site reviews.

Total Capital Cost:	$8,226,000
O&M Costs (present worth):	$1,281,000
Total Cost:	$9,507,000

D. Alternative 4: No CERCLA action at SAs 6, 12, and 13, and AOC 41; limited debris removal at AOC 11; excavation and consolidation of debris at AOCs 9 and 40

Alternative 4 includes three debris management approaches for the seven landfills. At SAs 6, 12, and 13, and AOC 41, no CERCLA action would be taken. At AOC 11, surface debris would be removed for disposal. The entire debris volumes at AOCs 9 and 40 would be excavated and consolidated in a new secure landfill near the existing Shepley's Hill Landfill.

Alternative 4 also includes removing exposed drums at AOC 40 to remove a potential source of contamination, and excavating sediment from two hot spots in Cold Spring Brook Pond to reduce ecological risk from contamination exposure.

Key components of Alternative 4 include:

No CERCLA Action at SAs 6, 12, and 13 and AOC 41

- No action.

Limited Removal at AOC 11

- Mobilization/demobilization;
- Removal of debris, and transportation to the Consolidation Landfill;
- Backfilling site; and
- Site restoration.

Excavation and Consolidation of AOCs 9 and 40

- Mobilization/demobilization;
- AOC 40 sediment removal and disposal;
- AOC 40 drum removal and disposal;
- Debris excavation and backfill at AOCs 9 and 40;
- Wetlands restoration;
- Consolidation of excavated debris at consolidation landfill;
- Institutional controls;
- Cover system monitoring and maintenance at consolidation landfill; and
- Five-year site reviews.

Total Capital Cost	$16,235,000
O&M Costs (present worth)	$ 411,000
Total Cost:	$16,646,000

E. Alternative 4a: No Further Action at SA 6; limited removal at AOC 11, SA 12, and AOC 41 (disposal in Consolidation Landfill); and excavation and consolidation of AOCs 9 and 40 and SA 13

Alternative 4a proposes removal of surface debris from AOC 11, SA 12, and AOC 41, excavating construction/demolition debris from AOC 9, AOC 40, and from SA 13, and consolidating the debris in a proposed secure landfill near Shepley's Hill Landfill. At AOC 11, SA 12, and AOC 41, known surface soil "hot spots" will be removed. At SA 6, no further action would be taken.

Alternative 4a includes removing exposed drums at Cold Spring Brook Landfill (AOC 40) to remove a potential source of contamination, and excavating sediment from two hot spots in Cold Spring Brook Pond, to reduce ecological risk from exposure to contaminated sediments.

Key components of Alternative 4a include:

No Further Action at SA 6

- No action

Limited Removal at AOC 11, SA 12, and AOC 41,

- Mobilization/demobilization;
- Excavation of surface debris and transportation to the Consolidation Landfill;
- Removal of known surface soil "hot spots"
- Backfilling site; and
- Site restoration.

Excavation and Consolidation of AOCs 9 and 40, and SA 13

- Mobilization/demobilization;
- AOC 40 sediment removal with disposal in the Consolidation Landfill;

- AOC 40 drum removal with disposal in the Consolidation Landfill;
- Debris excavation, backfill, and regrading at AOCs 9 and 40, and at SA 13;
- Wetlands restoration;
- Consolidation of excavated debris at Consolidation Landfill;
- Institutional controls;
- Cover system monitoring and maintenance at Consolidation Landfill; and
- Five-year site reviews.

Total Capital Cost	$16,888,000
O & M Costs (present worth)	$ 411,000
Total Cost	$17,299,000

F. Alternative 4b: No Further Action at SA 6; limited removal at AOC 11, SA 12, and AOC 41; and excavation of AOCs 9 and 40 and SA 13, with onsite consolidation or offsite disposal

Alternative 4b proposes removal of surface debris from AOC 11, SA 12, and AOC 41 excavating construction/demolition debris from AOC 9, AOC 40, and from SA 13, and either consolidating the debris in a proposed secure landfill at the former Golf Course Driving Range, or disposing the debris in an offsite landfill. At AOC 11, SA 12, and AOC 41, known surface soil "hot spots" will be removed. At SA 6, no further action would be taken.

Alternative 4b includes removing exposed drums at Cold Spring Brook Landfill (AOC 40) to remove a potential source of contamination, and excavating sediment from two hot spots in Cold Spring Brook Pond, to reduce ecological risk from exposure to contaminated sediments.

Key components of Alternative 4b include:

<u>No Further Action at SA 6</u>

- No action

Limited Removal at AOC 11, SA 12, and AOC 41

- Mobilization/demobilization;
- Excavation of surface debris and transportation to either the Consolidation Landfill or an offsite landfill;
- Removal of known surface soil "hot spots";
- Backfilling site; and
- Site restoration.

Excavation and Either Onsite Consolidation or Offsite Disposal of Debris from AOCs 9 and 40, and SA 13

- Mobilization/demobilization;
- AOC 40 sediment removal with disposal either in the Consolidation Landfill or offsite;
- AOC 40 drum removal with disposal either in the Consolidation Landfill or offsite;
- Debris excavation, backfill, and regrading at AOCs 9 and 40, and at SA 13;
- Wetlands restoration;
- Consolidation of excavated debris at Consolidation Landfill or transport to an offsite landfill;
- Institutional controls;
- If required, cover system monitoring and maintenance at Consolidation Landfill; and
- Five-year site reviews.

Onsite Debris Consolidation

Total Capital Cost	$16,888,000
O & M Costs (present worth)	$ 411,000
Total Cost	$17,299,000

Offsite Debris Disposal

Total Capital Cost	$29,158,000
O & M Costs (present worth)	$ 411,000
Total Cost	$29,289,000

G. Alternative 4c: No Further Action at SA 6; limited removal at SA 12 and AOC 41; and excavation of AOCs 9, 11, and 40, and SA 13, with onsite consolidation or offsite disposal.

Alternative 4c proposes removal of surface debris from SA 12 and AOC 41, excavating construction/demolition debris from AOCs 9, 11, and 40, and from SA 13, and either consolidating the debris in a proposed secure landfill at the former Golf Course Driving Range, or disposing the debris in an offsite landfill. At SA 6, no further action would be taken. Actions at SA 12 and AOC 41 would include removal of known surface soil "hot spots".

Alternative 4c includes removing exposed drums at Cold Spring Brook Landfill (AOC 40) to remove a potential source of contamination, and excavating sediment from two hot spots in Cold Spring Brook Pond, to reduce ecological risk from exposure to contaminated sediments.

Key components of Alternative 4c include:

No Further Action at SA 6.

- No action

Limited Removal at SA 12 and AOC 41.

- Mobilization/demobilization;
- Excavation of surface debris and transportation to either the Consolidation Landfill or an offsite landfill;
- Removal of known surface soil "hot spots";

- Backfilling sites; and
- Site restoration.

Excavation and Either Onsite Consolidation or Offsite Disposal of Debris from AOCs 9, 11, and 40, and SA 13.

- Mobilization/demobilization;
- AOC 40 sediment removal with disposal either in the Consolidation Landfill or offsite;
- AOC 40 drum removal with disposal either in the Consolidation Landfill or offsite;
- Debris excavation, backfill, and regrading at AOCs 9, 11, and 40, and at SA 13;
- Wetlands restoration;
- Consolidation of excavated debris at Consolidation Landfill, or transport to an offsite landfill;
- Institutional controls;
- If required, cover system monitoring and maintenance at Consolidation Landfill; and
- Five-year site reviews.

Onsite Debris Consolidation

Total Capital Cost	$19,796,000
O & M Costs (present worth)	$ 404,000
Total Cost	$20,200,000

Offsite Debris Disposal

Total Capital Cost	$34,636,000
O & M Costs (present worth)	$ 124,000
Total Cost	$34,760,000

H. Alternative 5: Limited debris removal at AOC 11; cap-in-place debris at SAs 6, 12, and 13, and AOC 41; excavation and consolidation of debris at AOCs 9 and 40

Alternative 5 includes three debris management approaches for the seven landfills. At AOC 11, surface debris would be removed for disposal. At SAs 6, 12, and 13, and AOC 41, a cap would be placed over the debris. The entire debris volumes at AOCs 9 and 40 would be excavated and consolidated in a new secure landfill near the existing Shepley's Hill Landfill.

Alternative 5 also includes removing exposed drums at AOC 40 to remove a potential source of contamination, and excavating sediment from two hot spots in Cold Spring Brook Pond to reduce ecological risk from contamination exposure.

Key components of Alternative 5 include:

Limited Removal at AOC 11

- Mobilization/demobilization;
- Removal of debris, and transportation to the Consolidation Landfill;
- Backfilling site; and
- Site restoration.

Cap-in-Place SAs 6, 12, and 13 and AOC 41

- Mobilization/demobilization;
- Site preparation;
- Cap construction;
- Site restoration;
- Wetland restoration;
- Institutional controls;
- Cover system monitoring and maintenance; and
- Five-year site reviews.

Excavation and Consolidation of AOC 9 and AOC 40

- Mobilization/demobilization;
- AOC 40 sediment removal and disposal;
- AOC 40 drum removal and disposal;
- Debris excavation and backfill at AOCs 9 and 40;
- Wetlands restoration;
- Consolidation of excavated debris at Consolidation Landfill;
- Institutional controls;
- Cover system monitoring and maintenance at Consolidation Landfill; and
- Five-year site reviews.

Total Capital Cost	$17,843,000
O&M Costs (present worth)	$ 1,764,000
Total Cost	$19,607,000

I. Alternative 6: Cap-in-place debris at SAs 6, 12, and 13, and AOC 41; excavation and consolidation of debris at AOCs 9, 11, and 40

Alternative 6 includes two debris management approaches for the seven landfills. At SAs 6, 12, and 13, and at AOC 41, a cap would be placed over the debris. The entire debris volumes at AOCs 9, 11, and 40 would be excavated and consolidated in a new secure landfill near the existing Shepley's Hill Landfill.

Alternative 6 also includes removing exposed drums at AOC 40 to remove a potential source of contamination, and excavating sediment from two hot spots in Cold Spring Brook Pond to reduce ecological risk from contamination exposure.

Key components of Alternative 6 include:

Cap-in-Place SAs 6, 12, and 13 and AOC 41

- Mobilization/demobilization;
- Site preparation;
- Cap construction;
- Site restoration;
- Wetland restoration;
- Institutional controls;
- Cover system monitoring and maintenance; and
- Five-year site reviews.

Excavation and Consolidation of AOCs 9, 11 and 40

- Mobilization/demobilization;
- AOC 40 sediment removal and disposal;
- AOC 40 drum removal and disposal;
- Debris excavation and backfill at AOCs 9, 11 and 40;
- Wetlands restoration;
- Consolidation of excavated debris at Consolidation Landfill;
- Institutional controls;
- Cover system monitoring and maintenance at Consolidation Landfill; and
- Five-year Site Reviews.

Total Capital Cost	$19,828,000
O&M Costs (present worth)	$ 1,757,000
Total Cost	$21,585,000

J. Alternative 7: Cap-in-place all seven landfills

Under Alternative 7, a cap would be placed over the debris at all seven landfills. Alternative 7 also includes removing exposed drums at AOC 40 to remove a potential source of contamination, and excavation of sediment from two hot spots in Cold Spring Brook Pond, to reduce ecological risk from contamination exposure.

Key components of Alternative 7 include:

Cap-in-Place AOCs 9, 11, 40, 41 and SAs 6, 12, 13

- Mobilization/demobilization;
- Site preparation;
- AOC 40 sediment removal and disposal at AOC 9;
- AOC 40 drum removal and disposal at AOC 9;
- Cap construction;
- Site restoration;
- Wetland restoration;
- Institutional controls;
- Cover system monitoring and maintenance; and
- Five-year site reviews.

Total Capital Cost	$ 9,832,000
O&M Costs (present worth)	$ 2,634,000
Total Cost	$12,466,000

K. Alternative 8: Limited debris removal at AOC 11; excavation and consolidation of debris from SAs 6, 12, and 13, and AOCs 9, 40, and 41

Alternative 8 includes two debris management approaches for the seven landfills. At AOC 11, surface debris would be removed for disposal. The entire debris volumes at SAs 6, 12, and 13,

and AOCs 9, 40, and 41 would be excavated and consolidated in a new secure landfill near the existing Shepley's Hill Landfill.

Alternative 8 also includes removing exposed drums at AOC 40 to remove a potential source of contamination, and excavation of sediment from two hot spots in Cold Spring Brook Pond to reduce ecological risk from contamination exposure.

Key components of Alternative 8 include:

Limited Removal at AOC 11

- Mobilization/demobilization;
- Removal of debris and transportation to the Consolidation Landfill;
- Backfilling site; and
- Site restoration.

Excavation and Consolidation of SAs 6, 12, and 13, and AOCs 9, 40, and 41

- Mobilization/demobilization;
- AOC 40 sediment removal and disposal;
- AOC 40 drum removal and disposal;
- Debris excavation and backfill;
- Wetlands restoration;
- Consolidation of excavated debris at Consolidation Landfill;
- Institutional controls;
- Cover system monitoring and maintenance at Consolidation Landfill; and
- Five-year site reviews.

Total Capital Cost	$17,730,000
O&M Costs (present worth)	$ 411,000
Total Cost	$18,141,000

L. Alternative 9: Excavation and consolidation of debris from all seven landfills

Under Alternative 9, the entire debris volumes at all seven landfills would be excavated and consolidated in a new secure landfill near the existing Shepley's Hill Landfill.

Alternative 9 also includes removing exposed drums at AOC 40 to remove a potential source of contamination, and excavation of sediment from two hot spots in Cold Spring Brook Pond to reduce ecological risk from contamination exposure.

Key components of Alternative 9 include:

Excavation and Consolidation of SAs 6, 12, and 13, and AOCs 9,11, 40, and 41

- Mobilization/demobilization;
- AOC 40 sediment removal and disposal;
- AOC 40 drum removal and disposal;
- Debris excavation and backfill;
- Wetlands restoration;
- Consolidation of excavated debris at Consolidation Landfill;
- Institutional controls;
- Cover system monitoring and maintenance at Consolidation Landfill; and
- Five-year site reviews.

Total Capital Cost	$19,715,000
O&M Costs (present worth)	$ 480,000
Total Cost	$20,195,000

IX. SUMMARY OF THE COMPARATIVE ANALYSIS OF ALTERNATIVES

Section 121(b)(1) of CERCLA presents several factors that at a minimum the Army is required to consider in its assessment of alternatives. Building upon these specific statutory mandates, the NCP articulates nine evaluation criteria to be used in assessing the individual remedial

alternatives. The nine criteria are used to select a remedy that meets the goals of protecting human health and the environment, maintaining protection over time, and minimizing untreated waste.

A detailed analysis was performed on the alternatives using the nine evaluation criteria to select a site remedy. Specific discussion regarding this analysis is provided in Section 5 of the FS report. Definitions of the nine criteria are provided below:

Threshold Criteria

The two threshold criteria described below must be met in order for an alternative to be eligible for selection in accordance with the NCP.

- Overall Protection of Human Health and the Environment - Assesses how well an alternative, as a whole, achieves and maintains protection of human health and the environment.
- Compliance with Applicable or Relevant and Appropriate Requirements (ARARs) - Assesses how the alternative complies with location-, chemical-, and action-specific ARARs, and whether a waiver is required or justified.

Primary Balancing Criteria

The following five criteria are used to compare and evaluate the elements of alternatives that meet the threshold criteria.

- Long-Term Effectiveness and Permanence - Evaluates the effectiveness of the alternative in protecting human health and the environment after response objectives have been met. This criterion includes consideration of the magnitude of residual risks and the adequacy and reliability of controls.

- Reduction of Toxicity, Mobility, and Volume Through Treatment - Evaluates the effectiveness of treatment processes used to reduce toxicity, mobility, and volume of hazardous substances. This criterion considers the degree to which treatment is irreversible, and the type and quantity of residuals remaining after treatment.

- Short-Term Effectiveness - Examines the effectiveness of the alternative in protecting human health and the environment during the construction and implementation of a remedy until response objectives have been met. Considers the protection of the community, workers, and the environment during implementation of remedial actions.

- Implementability - Assesses the technical and administrative feasibility of an alternative and availability of required goods and services. Technical feasibility considers the ability to construct and operate a technology and its reliability, the ease of undertaking additional remedial actions, and the ability to monitor the effectiveness of a remedy. Administrative feasibility considers the ability to obtain approvals from other parties or agencies and extent of required coordination with other parties or agencies.

- Cost - Evaluates the capital, and operation and maintenance costs of each alternative.

Modifying Criteria

The modifying criteria are used on the final evaluation of remedial alternatives generally after the Army has received public comments on the FS and proposed plan.

- State Acceptance - This criterion considers the state's preferences among or concerns about the alternatives, including comments on ARARs or the proposed use of waivers.

- Community Acceptance - This criterion considers the communities preferences among or concerns about the alternatives.

Following the detailed analysis of each individual alternative, the Army conducted a comparative analysis, focusing on the relative performance of each alternative against the nine criteria. This comparative analysis of the five alternatives is presented in Table 6-1 of the FS report and summarized below.

A. Overall Protection of Human Health and the Environment

This criterion addresses how an alternative as a whole will protect human health and the environment. This includes an assessment of how public health and environmental risks posed through each pathway are eliminated, reduced, or controlled through treatment, engineering controls, or institutional controls. According to CERCLA, this criterion must be met for a remedial alternative to be chosen as a final site remedy.

Interpreted current risk to human health and the environment posed by debris at the landfill sites has been determined not to be significant, when considering current and projected land use. This assessment is documented in detail in Section 3.0 of the January 1997 Landfill Remediation Feasibility Study Report (ABB-ES, 1997). Thus, the degree of protection of human health and the environment provided by each of the twelve remedial alternatives, including those which propose no action, could be considered similar. The following comparisons are written in the context of protection against future possible risk posed by migration and/or release of potential, unidentified landfill contaminants.

Alternative 9, which features complete debris removal at all seven sites, addresses potential contaminant migration to groundwater at all of the debris disposal areas, and thus can be considered the most protective of the alternatives. Alternative 1 offers no action at all sites and therefore can be considered least protective of the alternatives. The remaining alternatives offer varying degrees of protection, with Alternatives 4a, 4b, 4c, 6, 7, and 8 supplying more protection because they would completely isolate greater amounts of debris through complete debris excavation and consolidation than would actions in Alternatives 2, 3, 4, and 5. Each of the Alternatives 2, 3, 4, and 5 feature no further action, limited action, or capping-in-place for the majority of the landfills. Capping-in-place offers limited protection of human health and the

environment, because significant amounts of debris (i.e., portions of the debris at AOCs 9, 11, and 40) lie below the water table and would contact groundwater even if capped.

Alternatives which include full debris removal at AOCs 9, 11, and 40 (i.e., Alternatives 4, 4a, 4b, 4c, 5, 6, 8, and 9) provide the highest level of protection possible at the three sites. Portions of the debris at AOCs 9, 11, and 40 lie below the water table. At AOC 9, planned increased use of the nearby wastewater plant could result in adverse effects from the landfill on the environment. Modeling at AOC 40 indicates that groundwater from AOC 40 could migrate toward the Patton drinking water supply well, if the well was pumped continuously near its permitted capacity.

B. Compliance with ARARs

This criterion addresses whether a remedy complies with all state and federal environmental and public health laws and requirements that apply or are relevant and appropriate to the conditions and cleanup options at a specific site. If an alternative cannot meet an ARAR, the analysis of the alternative must provide the rationale for invoking a statutory waiver.

Location-specific ARARs identified for landfill remediation include regulations that protect wetlands, floodplains, and endangered species. Alternative 1 would not involve activities that would trigger location-specific ARARs. Remedial actions in those alternatives which feature a greater amount of in-place landfill capping and debris excavation with onsite consolidation or offsite disposal (i.e., Alternatives 4a, 4b, 4c, 6, 7, 8, and 9) have the potential to impact wetlands and floodplains. Remedial actions in the cited alternatives would trigger location-specific ARARs to a greater degree than would the remedial actions in Alternatives 2, 3, 4, and 5. The latter alternatives focus less on in-place landfill capping and debris excavation, and more on limited action or no further action.

Remedial actions in Alternatives 2 through 9, inclusive, would be executed in a manner to comply with applicable or relevant and appropriate location-specific ARARs. A synopsis of location-specific ARARs is included in Appendix B to this ROD.

Chemical-specific ARARs include regulations protecting surface water and groundwater quality. Alternative 1 would not involve activities that would trigger chemical-specific ARARs. Remedial actions in those alternatives which feature a greater amount of in-place landfill capping and debris excavation with onsite consolidation or offsite disposal (i.e., Alternatives 4a, 4b, 4c, 6, 7, 8, and 9) have the potential to affect surface water and groundwater quality. Remedial actions in the cited alternatives would trigger chemical-specific ARARs to a greater degree than would the remedial actions in Alternatives 2, 3, 4, and 5. The latter alternatives focus less on in-place landfill capping and debris excavation, and more on limited action or no further action.

Remedial actions in Alternatives 2 through 9, inclusive, would be executed in a manner to comply with applicable or relevant and appropriate chemical-specific ARARs. A synopsis of chemical-specific ARARs is included in Appendix B to this ROD.

Action-specific ARARs include regulations related to construction in navigable waters, control of surface water runoff, construction of landfill liners and cover systems, and submittal of landfill closure plans. Massachusetts Solid Waste Management Regulations at 310 Code of Massachusetts Regulations (CMR) 19.000 have been identified as relevant and appropriate for landfill sites evaluated in Alternatives 2 through 9, inclusive.

Final closure and post-closure plans would be prepared for those landfill sites to be capped-in-place or excavated in Alternatives 2 through 9, inclusive, to satisfy the requirements of 310 CMR 19.021. Proposed landfill covers for those landfill sites to be capped-in-place in Alternatives 2, 3, 5, 6, and 7 would be constructed in accordance with the requirements of 310 CMR 19.112. Construction, operation, and maintenance of the consolidation landfill proposed for Alternatives 4, 4a, 4b, 4c, 5, 6, 8, and 9 would conform to 310 CMR 19.000. Final closure and post-closure requirements in 310 CMR 19.021 would be met by Alternatives 2 through 9, inclusive, but not by Alternative 1.

Remedial actions in Alternatives 2 through 9, inclusive, would be executed in a manner to comply with applicable or relevant and appropriate action-specific ARARs. A synopsis of action-specific ARARs is included in Appendix B to this ROD.

C. Long-term Effectiveness and Permanence

This criteria refers to the ability of an alternative to maintain reliable protection of human health and the environment over time once the cleanup levels have been met. In addition, it refers to the ability of an alternative to address current and future risks presented by the landfills, restoration and protection of natural resources, and the civilian redevelopment effort at Devens.

Landfill debris at the seven disposal areas pose no significant current risk to human and environmental receptors. Thus, each of the twelve alternatives provide similar long-term effectiveness and permanence relative to protection of human health and the environment.

Alternatives 1 through 9, inclusive, would provide varying degrees of protection of human health and the environment from potential, future risks. Potential, future risks include those caused by future migration of landfill debris contaminants to public groundwater supplies. Alternatives 8 and 9 offer the greatest amount of protection from future contaminant release, because debris from most or all of the disposal areas would be completely excavated and isolated in a new landfill containing a low-permeability cap and liner. Alternatives 1 through 7, inclusive, offer a lesser degree of protection from future contaminant release, because they feature a combination of capping-in-place, limited action, and no action. Though not as effective in preventing potential contaminant release as is total containment, capping-in-place will reduce surface infiltration to landfill materials, promote surface water drainage, minimize erosion, and isolate debris from the environment. Alternative 1 provides no additional degree of protection from future contaminant release beyond that which already exists.

Alternatives 1 through 9, inclusive, would provide varying degrees of support for the ongoing community effort to improve the water quality of the Nashua River. Alternative 4c offers the greatest amount of support because debris at AOC 11 would be completely excavated. The remaining alternatives, Alternatives 1 through 4b, inclusive, and 5 through 9 would offer less support for restoration and protection of natural resources, because debris at AOC 11 would not be completely excavated.

Alternatives 1 through 9, inclusive, would provide varying degrees of support for the civilian redevelopment at Devens. Alternatives which feature complete debris excavation at AOCs 9 and 40 and at SA 13 (i.e., Alternatives 4a, 4b, 4c, 8, and 9) offer the highest degree of support, because redevelopment is likely to occur at or near those sites. Alternatives 1, 2, 3, and 7 would offer the least degree of redevelopment support; debris at AOCs 9 and 40 and SA 13 would remain in place, rendering the three sites unsuitable for development. In addition, expansion plans for the wastewater facility near AOC 9 and for the Patton groundwater supply well near AOC 40 would be inhibited.

Long-term effectiveness and permanence are expected to be equal for the onsite and offsite debris disposal options in Alternative 4c.

D. Reduction of Toxicity, Mobility, and Volume through Treatment

This criterion is a principal measure of the overall performance of an alternative. The 1986 amendments to the Superfund statute emphasize that, whenever possible, a remedy should be selected that uses a treatment process to reduce permanently the toxicity of contaminants at the site, the spread of contaminants away from the source of contamination, and the volume or amount of contamination at the site.

None of the twelve remedial alternatives meet the statutory preference for treatment under CERCLA, because they do not contain provisions for treating contaminants or debris. Except for Alternative 1, No Action, all of the alternatives contain landfill capping or debris consolidation in a new landfill as a remedy for one or more of the debris disposal areas. Debris excavation with containment in a new landfill and, to a lesser degree, capping-in-place (due to the location of portions of the debris below the water table), will reduce infiltration to landfill materials and resulting leaching of contaminants, and thus reduce contaminant mobility.

It is possible, though not known at this time, that the alternatives which include either debris consolidation in a new landfill or offsite debris disposal may employ material recycling and re-use as a component. Recycling, as a generic treatment, would effectively reduce the volume of debris to be disposed.

E. Short-term Effectiveness

This refers to the likelihood of adverse effects on human health or the environment that may be posed during the construction and implementation of an alternative until cleanup goals are achieved.

Alternative 1 has the least likelihood for adverse effects during implementation because no action is proposed. In general, alternatives that would cause the greatest degree of short-term impact to the community are those (i.e., Alternatives 4a, 4b, 4c, 6, 8, and 9) that feature the greatest volumes of complete debris excavation. Complete debris excavation and disposal activities will necessitate a greater volume of construction equipment and vehicle traffic than would capping-in-place or limited removal. Schedules for truck transport of equipment, materials, and debris on area roadways would be coordinated in advance with local authorities to minimize adverse impacts to local vehicular traffic.

Available information does not suggest the presence of hazardous materials that would present a risk to workers during disturbance of debris. Worker adherence to general health and safety practices, and use of personnel monitoring would reduce exposure to potentially hazardous substances to a safe level. Excavation and capping of landfill debris, and construction of the consolidation landfill could generate dust during implementation of Alternatives 2 through 9. Dust suppression techniques would reduce potential risk to workers and the community. A Health and Safety Plan would be followed during performance of remedial activities, and during environmental monitoring to minimize risk of site hazards to workers.

Short-term impacts to the community and to site workers are expected to be equal for the onsite and offsite debris disposal options in Alternative 4c.

F. Implementability

Implementability refers to the technical and administrative feasibility of an alternative, including the ease of construction and operation; administrative feasibility; and availability of services,

equipment, and materials to construct and operate the technology. Also evaluated is the ease of undertaking additional remedial actions.

Post-closure requirements included in all of the alternatives (except Alternative 1, No Action) present no implementation problems. Equipment and services required for post-closure landfill cover maintenance and environmental monitoring are readily available. Zoning and deed restrictions (i.e., institutional controls) included in all alternatives except Alternative 1 can be easily implemented. Enforcement of institutional controls would be required.

Remedial actions involved in all alternatives except Alternative 1, including landfill capping, debris removal and transport, and new landfill construction can be easily designed and implemented. The activities can be completed using standard construction procedures and conventional earthmoving equipment. Many qualified engineering and construction companies are available.

The alternatives that include onsite debris consolidation (i.e., Alternatives 4, 4a, 4b, 4c, 5, 6, 8, and 9) would require a long-term landfill leachate discharge agreement between the Army and the owner of the Publicly-Owned Treatment Works (POTW) selected for discharge.

The relative ease of implementability for each of the onsite and offsite debris disposal options in Alternative 4c are considered equal.

G. Cost

Cost includes the capital (up-front) cost of implementing an alternative and the cost of operating and maintaining the alternative over the long-term, and net present worth of both capital and operation and maintenance costs.

A comparison of the estimated total present worth costs (based on a 7 percent discount rate) for each alternative evaluated in detail is presented in Table 3.

TABLE 3 ALTERNATIVE COST ESTIMATED SUMMARY

Alternative	Capital Cost	O & M Cost (net Present worth)	Total Cost (net present worth)
1	$0	$0	$0
2	$ 6,633,000	$ 953,000	$ 7,586.000
3	$ 8,226,000	$ 1,281,000	$ 9,507,000
4	$ 16,235,000	$ 411,000	$ 16,646,000
4a	$ 16,888,000	$ 411,000	$ 17,299,000
4b (onsite option) 4b (offsite option)	$ 16,888,000 $ 29,158,000	$ 411,000 $ 131,000	$ 17,299,000 $ 29,289,000
4c (onsite option) 4c (offsite option)	$ 19,796,000 $ 34,636,000	$ 404,000 $ 124,000	$ 20,200,000 $ 34,760,000
5	$ 17,843,000	$ 1,764,000	$ 19,607,000
6	$ 19,828,000	$ 1,757,000	$ 21,585,000
7	$ 9,832,000	$ 2,634,000	$ 12,466,000
8	$ 17,730,000	$ 411,000	$ 18,141,000
9	$ 19,715,000	$ 480,000	$ 20,195,000

Capital, operation and maintenance, and present worth costs for each alternative were calculated with an estimated accuracy of -30 percent to +50 percent. The alternatives with the lowest capital costs are those that include the least amount of construction, such as Alternatives 2, 3, and 7. Alternatives 4b (offsite disposal optional) and 4c (offsite disposal optional), which involve greater amounts of construction, require larger capital investment.

Operation and maintenance costs are estimated on an annual basis, and are lowest for Alternative 1, which does not provide any long-term maintenance or monitoring. Operation and maintenance costs for the remaining alternatives include environmental monitoring for 30 years.

H. State Acceptance

This criterion addresses whether, based on its review of the site investigation reports, the FS report, the FS Addendum report, and Proposed Plan, the state concurs with, opposes, or has no comment on the alternative the Army is proposing as the remedy for the SAs and AOCs. The Commonwealth of Massachusetts has reviewed the site investigation reports, the FS report, the FS Addendum report, Proposed Plan, and this ROD, and concurs with the selected remedy. A copy of the Declaration of State Concurrence is presented in Appendix E of this ROD.

I. Community Acceptance

This criterion addresses whether the public concurs with the Army's proposed plan. A majority of the comments received from the community during the public comment period indicated approval of the Army's preferred approach to landfill remediation. The Army believes this shows community acceptance of the proposed plan and selected remedy. The community has accepted the Army's selected alternative, and has indicated a preference for the alternative's option for offsite disposal.

X. THE SELECTED REMEDY

The selected remedy to address disposal of debris at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41 is Alternative 4c. The alternative includes components for containment of landfill debris and for management of potential contaminant migration. The remedial components of the selected remedy are described in detail below.

A. Remediation Goals

Implementation of the selected remedy will satisfy the response objectives referenced in Section VII. The remedial response objectives were developed to mitigate existing and future potential threats to human health and the environment. The selected remedy features debris removal and containment, with removal of isolated hot spot surface soil areas that pose risk to environmental

receptors. The Army will prepare a work plan to describe, in detail, proposed remedial activities including complete debris excavations at AOCs 9, 11, and 40, and at SA 13. The work plan will identify the conditions by which complete debris excavations will cease, and site restoration can begin.

B. Description of Remedial Components

Alternative 4c includes excavating construction/demolition debris from AOCs 9, 11, and 40, and from SA 13, and either consolidating the debris in a proposed secure landfill at the former Golf Course Driving Range, or disposing the debris in an offsite landfill. At SA 6, no further action would be taken. Actions at SA 12 and AOC 41 would include removal of visible man-made surface debris, and removal of known surface soil "hot spots".

Alternative 4c includes removing exposed drums at Cold Spring Brook Landfill (AOC 40) to remove a potential source of contamination, and excavating sediment from two hot spots in Cold Spring Brook Pond, to reduce ecological risk from exposure to contaminated sediments.

Key components of Alternative 4c include:

SA 6

No further action

SA 12, AOC 41

- Mobilization/demobilization
- Site preparation
- Surface debris removal
- Known hot-spot removal
- Backfilling/regrading/revegetation
- Site monitoring

AOC 9, AOC 11, SA 13, AOC 40

- Mobilization/demobilization
- Site preparation
- AOC 40 sediment removal with disposal either in the Consolidation Landfill or offsite
- AOC 40 drum removal with disposal either in the Consolidation Landfill or offsite
- Debris excavation, backfill, and regrading
- Wetlands restoration at AOC 9, AOC 11, and AOC 40
- Consolidation of excavated debris at onsite Consolidation Landfill, or transport to an offsite landfill
- If required, cover system monitoring and maintenance at Consolidation Landfill
- Institutional controls and five-year site reviews at those sites where unrestricted future use is not achievable or economical

Each component is described in the following paragraphs. The descriptions reflect preliminary design evaluation, and are subject to change during detailed design.

Mobilization/demobilization Excavation and backfill equipment including backhoes, bulldozers, and dump trucks would be mobilized at AOC 9, AOC 11, AOC 40, and SA 13. Additional sediment removal equipment requiring mobilization at AOC 40 may include an excavator or a clamshell crane, watertight dump trucks, and water storage tanks.

Site preparation. Initial activities at AOC 9, AOC 11, AOC 40, and SA 13 would be clearing of trees, constructing temporary access roads, and installing silt fences and erosion control measures. Contractor trailers with utilities may be established, and parking and staging areas prepared.

At AOC 40, Cold Spring Brook Landfill, drum removal would be attempted by hydraulic excavator or backhoe from the landfill surface. Some tree removal and minor regrading of the landfill surface may be needed to accomplish this task. Sediment removal from sediment Area I would also be attempted from the landfill surface. The most direct access to sediment Area I from Patton Road would be to cross the landfill east of well CSM-93-01A. However, the landfill

surface is relatively high in this area and it may not be possible to reach the entire sediment removal area. As an alternative, approaching the sediment removal area via a more easterly route may make sense. The pond bank is lower and the debris/rubble would provide a relatively firm foundation for excavation equipment. Even with this approach, construction of up to 200 feet of temporary road along the edge of the pond/landfill may be necessary. A third alternative would be to construct approximately 500 feet of temporary access road along the northwestern side of the landfill. Construction of either access road would likely require placement of a geotextile mat and significant quantities of gravel over the naturally occurring peat to support heavy equipment. Construction of the longer road would also require removal of a number of trees. As indicated in Figure 8-3 of the FS Report, it may be possible to construct the road along the northwest edge of the landfill without crossing wetland areas. However, this would need to be confirmed. The cost estimates for sediment removal at Area I are based on construction and subsequent removal of 200 feet of temporary access road.

Prior to excavation at sediment Area II near the outlet of Cold Spring Brook Pond, some fill material may need to be placed along the bank of the pond to provide a level platform for equipment. Access would be from Patton Road east of the pond. For cost estimating purposes, it is assumed that gravel would be obtained onsite from the southern side of Patton Road to construct the work platforms and access roads. If this gravel cannot be used, material costs would increase. These access roads would be temporary, and would be removed following completion of remedial activities at the landfill. The cost estimate includes removal of temporary roads or work platforms at Area II.

Construction of a lined basin for dewatering sediment, a lined drum storage area for staging drums, small decontamination pads, a stockpile area approximately 1 acre in size for storage of excavated materials, and a small parking area would be required.

Partial dewatering of Cold Spring Brook Pond may be required prior to debris excavation.

Sediment removal and disposal at AOC 40. Sediment removal will occur at AOC 40 for two hot spot locations producing elevated ecological risks due to arsenic and DDD contamination in Cold Spring Brook Pond. The first location (Area I) is a small inlet east of monitoring well CSB-2

(see Figure 7 in Appendix A). The second location (Area II) is at the pond outlet. For cost estimating purposes, the volume of sediment to be removed has been estimated to be 1,200 cy.

A silt fence or a floating boom weighted at its bottom would be placed around the two excavation areas to prevent sediment suspended during excavation from migrating to other locations in the pond. Sediment removal would be attempted by a long-stick hydraulic excavator or a crane with a watertight clamshell bucket to minimize the quantity of water and sediment spilling adjacent to the excavation. If access from the top of the landfill is not successful, a temporary access road would be constructed along the northern side of the landfill, and sediment would be removed with an excavator. Sediment would be placed in watertight dump trucks and transported to a lined dewatering basin constructed as close to the landfill area as practicable. For cost estimating purposes, the lined dewatering basin is proposed to be 100 x 100 feet with a 4-foot depth, constructed with an impervious liner to temporarily store sediment and water.

As the sediment settles out, the supernatant water would be pumped into tanks and sampled. If analysis shows that the water will not cause Cold Spring Brook Pond to exceed AWQC, it would be discharged back to the pond. If water quality does not meet acceptable criteria, it would be treated onsite in a mobile clarifier before discharge to the pond. Sediments would be disposed either at the Consolidation Landfill or offsite. The addition of a sorbent or solidifying agent may be necessary to eliminate free water prior to transport and disposal. For cost estimating purposes, treatment of supernatant water is assumed.

Drum removal and disposal at AOC 40. At AOC 40, 14 55-gallon drums along the northern edge of Cold Spring Brook Landfill would be removed. Drums are located on the landfill bank, as well as partially submerged in the pond. The drums have been sampled and found to contain relatively low-level residual contamination. They will be removed in conjuction with overall debris excavation.

Debris Excavation, Backfill, and Regrading at AOCs 9, 11, and 40, and at SA 13. A total debris volume of approximately 267,000 cy will be generated by excavation from AOC 9 (112,000 cy), AOC 11 (35,000 cy), AOC 40 (110,000 cy), and SA 13 (10,000 cy).

Debris will be removed with excavators with the possible necessity of specialized equipment for AOC 40, due to the steep slopes at these areas. Erosion control measures will be used at all excavations, especially those adjacent to wetlands, to prevent impacts to surrounding areas. These measures may include silt fences, hay bales, and covers for soil piles left onsite during excavation.

AOC 11 is located between wetlands to the north and south, and adjacent to the Nashua River to the east. A natural berm along the Nashua River separates the debris from the river water. This berm is 8 to 10 feet above normal river elevations, but still below flood stage. It is recommended that debris excavation be scheduled for low-flow summer months.

During excavations, debris will be screened to identify and segregate material that is potentially hazardous. First, an experienced professional would visually scan excavated debris, and arrange separation of materials that appear potentially hazardous. Potentially hazardous materials could include containers, drums, and stained or odorous soil. Segregation would also be determined using readings from field instruments such as a photoionization detector. Following segregation, samples would be collected from the soil that is mixed with the debris. An onsite laboratory would be used to measure volatile and semi-volatile organic compounds, inorganics, polychlorinated biphenyls, pesticides, and total petroleum hydrocarbons. An offsite laboratory analysis would be used to confirm onsite laboratory results. The toxicity characteristic leaching procedure (TCLP) will be used to determine whether segregated materials are hazardous. Onsite laboratory results will be compared to theoretical TCLP criteria. If onsite results are greater than TCLP criteria, samples will be sent offsite for analysis. If offsite TCLP results exceed regulatory limits, the associated materials will be disposed offsite in a licensed, hazardous waste disposal facility. The screening process is summarized in Figure 10 of Appendix A.

Subsequent to debris removal, the excavations at AOC 9, AOC 11, and SA 13 will be backfilled and regraded.

Wetlands Restoration. Remedial activities at AOC 9, AOC 11, and AOC 40 will disturb bordering wetland areas. The areas would be restored in accordance with Wetland Restoration Specifications (WRS) prepared prior to wetland restoration. The WRS would incorporate

guidelines from the Massachusetts Wetland Protection Act and Regulations, specifically 310 CMR 10.55. The primary goal of wetland restoration activities is to restore self-sustaining freshwater wetlands in situ (i.e., in the same "footprint" as the altered wetlands).

Restoration of wetlands would:

- Reduce long-term impacts of activities in and adjacent to wetlands;
- Compensate for loss of wetland habitats;
- Restore or replace degraded wetlands; and
- Meet state and federal permitting and regulatory guidelines and requirements.

Based on regulatory guidelines, including 310 CMR 10.55 and wetlands regulations regarding restoration, the WRS should include: careful consideration of site hydrology, topography, vegetation, and soil characteristics; evaluation of wetlands functional assessment; examination of regional wetlands replacement literature; consultation with regulatory and technical authorities; and experience with similar wetland restoration projects. This WRS will be prepared in accordance with state and federal technical requirements for wetland alteration. The WRS will include a detailed description of all proposed activities, and a discussion of goals based on wetland functional attributes.

Disposal Option One: Consolidation of Excavated Debris at Consolidation Landfill. The Consolidation Landfill would be constructed at the Former Golf Course Driving Range. Design for construction, operation, and closure of the landfill would be carried out in accordance with the Massachusetts Solid Waste Management Facility Regulations 310 CMR 19.000 Parts I and II. This alternative assumes that the Consolidation Landfill would be constructed prior to excavation at the debris areas.

The conceptual design for the Consolidation Landfill complies with the requirements of 310 CMR 19.110 and 19.112. If this alternative is selected, alternative design components and methodologies to improve performance and/or reduce costs should be evaluated during the design phase.

The cost estimate for this alternative is based on construction of an approximately 11-acre landfill with capacity for the estimated 267,000 cy of debris. For estimating purposes, the daily cover was estimated to be 10 percent of the total volume to be landfilled and the final cover would be 5 feet thick. The total estimated volume, including debris, daily cover, and final cover, would be approximately 344,000 cy.

The conceptual Consolidation Landfill used for cost estimating has three-horizontal to one-vertical side slopes maximum, 5 percent top slope minimum, and 2 percent bottom slope. The landfill could rise up to approximately 32 feet above existing grade. Figure 11, an illustration showing the various landfill liner and cap components, is included in Appendix A.

The conceptual Consolidation Landfill includes a groundwater protection system to: (1) provide an effective hydraulic barrier preventing leachate from reaching groundwater and (2) to collect landfill leachate for disposal. MADEP landfill guidance (MADEP, 1993) requires a four-foot separation between the top of bedrock or the maximum high groundwater level, and the bottom of the lowermost low-permeability layer of the protection system. The groundwater protection system would consist of a composite hydraulic barrier layer (low permeable soil layer and geomembrane), a drainage layer with leachate collection pipes, a buffer soil layer, and a geotextile fabric. The purpose of the fabric is to prevent clogging of the leachate collection soil layers caused by potential migration of fine particles contained within the landfilled debris. The composite hydraulic barrier would consist of compacted soil with a maximum in-place saturated hydraulic conductivity of $1x10^{-7}$ cm/sec, overlain by a geomembrane. A sand drainage layer above the geomembrane is proposed. The drainage layer would have a minimum hydraulic conductivity of $1x10^{-2}$ centimeter per second (cm/sec) with leachate collection pipes. The sand drainage layer and the leachate collection pipes would provide a high permeability pathway for leachate collection. The buffer soil layer above the sand layer would have a minimum hydraulic conductivity of $1x10^{-3}$ cm/sec. Leachate collected in the landfill could be removed by pumping the leachate directly from the leachate collection system into tanker trucks for transport to an approved wastewater treatment facility for disposal.

When debris disposal is complete, the landfill will be closed and a low-permeability cover system constructed. A subgrade buffer soil will be placed over the debris to prevent penetration

of the overlying geomembrane. A sand drainage layer with a minimum hydraulic conductivity of $1x10^{-3}$ cm/sec would overlay the geomembrane. A common borrow soil layer would overlay the drainage soil for moisture retention and for protection of the geomembrane against heaving from frost. A geotextile fabric would separate the moisture retention soil layer from the drainage soil layer. Vegetative topsoil would be placed above the moisture retention soil layer.

Disposal Option Two: Disposal of Excavated Debris at Offsite Landfill. Transfer of debris from Devens to an offsite landfill could be accomplished using truck transport in accordance with the U.S Department of Transportation regulations, or via rail. The Army will determine the transport method when the contract for remedial work is awarded. The following description of offsite debris disposal was taken from the evaluation in the FS Addendum report, and assumes rail transport.

Excavated debris that has been screened for hazardous materials will be loaded into trucks or intermodal boxes for transport. It is assumed that dump trucks will be used. Covered debris will be transported via truck to a rail siding. It is assumed that the existing rail siding at Devens will be used. The remedial action contractor could elect to transport debris to a rail siding located offsite, if it was determined to be a more cost-effective option.

At the rail siding, debris would be transferred to rail cars. For purposes of FS evaluation, it is assumed that a ramp will be constructed at the siding, allowing direct-loading of debris from trucks into waiting rail (gondola) cars. Alternately, debris could be placed from the transport trucks onto a paved area adjacent to the rail, then transferred into gondola cars using a front-end loader.

Debris would be transported via rail to the offsite landfill. Debris disposal could be at one or multiple solid waste disposal facilities. Travel route and distance would be determined by the rail service provider, and would be largely dependent on disposal facility location. The frequency of rail traffic would be dependent on availability of rail cars and number of rail cars in the train.

Institutional Controls. Institutional controls are planned for the proposed Consolidation Landfill, and for those sites where debris will be excavated but unrestricted land use is not achievable or

economical. Institutional controls will be in the form of land use restrictions for property released by the Army during Fort Devens base closure activities. By preempting residential use, these controls will help limit human exposure. These controls would be drafted in cooperation with state and local government. The agency responsible for enforcement of the institutional controls has not been identified at this time.

Cover system Monitoring and Maintenance at Consolidation Landfill. Massachusetts Solid Waste Management Regulations (310 CMR 19.142) require the post-closure monitoring period to extend a minimum of 30 years. Proposed cover system monitoring and maintenance at the Consolidation Landfill would consist of conducting annual site inspections, performing needed cover system repairs, and mowing. More frequent site inspections will be performed, if necessary, as a result of severe weather events.

Inspections would be conducted to ensure the integrity of the landfill cover system layers, surface water diversion trenches, monitoring wells, access roads, and the general site conditions. Required maintenance activities would be proposed and conducted based on information from site inspections.

Groundwater monitoring is proposed to confirm that groundwater quality will remain acceptable over time. One upgradient and three downgradient monitoring wells are assumed for cost estimating. All monitoring wells would be sampled and analyzed semi-annually consistent with the monitoring requirements of 310 CMR 19.132 for a minimum of 30 years. Assumptions made for this monitoring plan are for cost estimating purposes only. A final detailed monitoring plan would be developed in conjunction with regulatory agency review and approval.

Five-year Site Reviews Under CERCLA 121c, remedial action (or lack thereof) that results in contaminants remaining onsite at levels that do not allow unrestricted land use must be reviewed at least every five years. Five-year site reviews will be conducted at those sites where debris will be excavated but unrestricted land use is not achieved.

The estimated length of time for implementation of the selected remedy is approximately 24 months for engineering evaluations, design, and construction.

Onsite Debris Consolidation Option

Estimated Capital Cost:	$19,796,000
Estimated Operation and Maintenance Cost: (net present worth)	$ 404,000
Estimated Total Cost: (net present worth, Assuming 7 percent discount rate)	$20,200,000

Offsite Debris Disposal

Estimated Capital Cost:	$34,636,000
Estimated Operation and Maintenance Cost: (net present worth)	$ 124,000
Estimated Total Cost: (net present worth, Assuming 7 percent discount rate)	$34,760,000

As a result of further evaluations to be conducted during implementation of the selected remedy, some revisions may be made to its components, as described above. Such changes, should they occur, would reflect additional information obtained during the engineering design and construction process.

XI. STATUTORY DETERMINATIONS

The selected remedy for SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41, Alternative 4c, is consistent with CERCLA and, to the extent practicable, the NCP. The selected remedy is protective of human health and the environment, and attains ARARs. The remedy utilizes permanent solutions and alternate treatment technologies, to the maximum extent practicable. However, because treatment of the principal sources of contamination was found not to be practicable, Alternative 4c does not satisfy the statutory preference for treatment as a principal element.

A. Threshold Criteria

1) Protection of Human Health and the Environment

Alternative 4c will reduce current and potential risks to human health and the environment by eliminating, reducing, or controlling exposures to human and environmental receptors through engineering and institutional controls.

By isolating debris from SA 13 and AOCs 9, 11, and 40 in a new onsite or existing offsite landfill, potential contaminant release from landfill debris to groundwater will be prevented. Construction of the optional onsite consolidation landfill will be in accordance with current state standards. Five-year site review of post-closure groundwater monitoring will ensure that no contaminants are being released from the new landfill to the environment. The selected alternative contains an option to relocate debris from the four disposal areas at an offsite landfill, thus completely removing contaminants from the communities that comprise Devens.

Alternative 4c contains onsite landfill consolidation and offsite disposal options for debris excavated from SA 13 and AOCs 9, 11, and 40. The Army will select on-site or off-site disposal after evaluating formal bids from qualified waste disposal contractors. Protection of human health and the environment will be one of four criteria considered by the Army during bid review. The Army will also consider: (1) the cost of the disposal option, (2) the ability of the disposal option to satisfy health and safety concerns identified by area residents and public officials, and (3) the bidding contractor's past performance on similar waste disposal projects.

Ecological risk from exposure to surface soil and sediment contaminants at SA 13 and AOC 40 will be eliminated by removal of "hot spots". Removal of known hot spot surface soil areas at SA 12 and AOC 41 will prevent risk to environmental receptors. Surface debris removal at SA 12 and AOC 41 will eliminate physical hazards.

2) Attainment of ARARs

The selected remedy will attain all applicable or relevant and appropriate federal and state requirements.

Tables B.1, B.2, and B.3 in Appendix B summarize ARARs for the selected remedy. The tables include the regulatory citation, a brief summary of the requirement, and how it will be attained. Environmental laws from which ARARs for the selected remedy are derived, and specific ARARs include:

Location-specific Federal Requirements:

- Floodplain Management Executive Order No. 11988, (40 CFR Part 6, Appendix A)(Applicable to AOC 9, AOC 11, AOC 40).
- Protection of Wetlands Executive Order 11990 (40 CFR Part 6, Appendix A)(Applicable to AOC 9, AOC 11, AOC 40).
- Clean Water Act, Dredge or Fill Requirements Section 404 (40 CFR Part 230) (Relevant and Appropriate to AOC 9, AOC 11, AOC 40).
- Fish and Wildlife Coordination Act (16 USC 661 et. seq.) (Relevant and Appropriate to AOC 9, AOC 11, AOC 40, SA 13).
- Endangered Species Act [50 CFR Parts 17.11-17.12] (Applicable to AOC 9, AOC 11, AOC 40, SA 13, and the Consolidation Facility).
- Migratory Bird Treaty Act [16 USC 703 et seq.] (Relevant and Appropriate to AOC 11).

Location-specific State Requirements:

- Massachusetts Wetland Protection Act and regulations [MGL c. 131 s. 40; 310 CMR 10.00](Applicable to AOC 9, AOC 11, AOC 40, and SA 13).
- Massachusetts Endangered Species Regulations [321 CMR 8.00] (Applicable to AOC 9, AOC 11, AOC 40, SA 13, and Consolidation Facility).

Chemical-specific Federal Requirements:

- Clean Water Act, Ambient Water Quality Criteria [40 CFR 131; Quality Criteria for Water 1986] (Relevant and Appropriate to AOC 11 and AOC 40).
- Safe Drinking Water Act, National Primary Drinking Water Regulations, MCLs and MCL Guidelines [40 CFR Parts 141.60 - 141.63 and 141.50 - 141.52] (Relevant and Appropriate to AOC 40).

Chemical-specific State Requirements:

- Massachusetts Surface Water Quality Standards [314 CMR 4.00] (Relevant and Appropriate to AOC 11 and AOC 40).
- Massachusetts Groundwater Quality Standards [314 CMR 6.00] (Relevant and Appropriate to AOC 40).
- Massachusetts Drinking Water Regulations [310 CMR 22.00] (Relevant and Appropriate to AOC 40).

Action-specific Federal Requirements:

- Rivers and Harbors Act of 1899 [33 USC 401 et seq.] (Relevant and Appropriate to AOC 40 and AOC 11).
- Clean Water Act NPDES Permit Program [40 CFR 122,125] (Relevant and Appropriate to AOC 9, AOC 11, AOC 40, SA 13, and the Consolidation Facility).
- Resource Conservation and Recovery Act (RCRA), Land Disposal Restrictions; (40 CFR Part 268) (Applicable to AOC 9, AOC 11, AOC 40, and SA 13).
- Toxic Substance Control Act Regulations (TSCA) [40 CFR Part 761] (Applicable to AOC 9, AOC 11, AOC 40, and SA 13).

Action-specific State Requirements:

- Massachusetts Solid Waste Facilities Site Regulations [310 CMR 16.00] (Applicable to the Consolidation Facility).
- Massachusetts Solid Waste Management Regulations [310 CMR 19.000] (Relevant and Appropriate to AOC 9, AOC 11, SA 12, SA 13, and the Consolidation Facility).
- Massachusetts Water Quality Certification and Certification for Dredging [314 CMR 9.00] (Relevant and Appropriate to AOC 40).
- Massachusetts Air Pollution Control Regulations [310 CMR 7.00] (Applicable to AOC 9, AOC 11, AOC 40, SA 13, and the Consolidation Facility).

B. Primary Balancing Criteria

1) Cost-Effectiveness.

Of the remedial actions considered in the FS, the selected action, Alternative 4c (assuming on-site containment) does not have the lowest-cost. Only Alternatives 6 and 9, which include either in-place or on-site containment of debris from all seven disposal areas, are costlier. The Army has determined that containment of debris at SAs 6 and 12, and AOC 41 is not warranted because of the relatively insignificant threats to human health and the environment present. Alternative 4c includes containment of debris from the four largest debris disposal areas; approximately 96 percent of the total volume of debris at the seven debris disposal areas will be contained. A review of the alternatives reveals that the selected remedial action most closely addresses comments expressed by the community with respect to desired actions at the seven disposal areas, and is responsive to the approved re-use plan of the Local Reuse Authority.

Alternative 4c contains onsite landfill consolidation and offsite disposal options for debris excavated from SA 13 and AOCs 9, 11, and 40. The Army will select on-site or off-site disposal after evaluating formal bids from qualified waste disposal contractors. During bid review, the Army will consider the following evaluation criteria:

- Overall protection of human health and the environment (evaluates the ability of each disposal option to reduce, eliminate, or control site risks or potential risks through engineering or institutional controls)
- Cost (a best value evaluation will be performed to determine which debris disposal option provides satisfactory risk mitigation for the least cost)
- Ability to satisfy health and safety concerns identified by area residents and public officials (public opinion with respect to the degree of health and safety provided by the proposed disposal options will be assessed)
- Contractor's past performance (a proven track record on similar waste disposal projects must be demonstrated by the bidding contractor)

The Army will perform a best value evaluation to determine which disposal option provides satisfactory risk mitigation for the least cost. Regulatory agencies and community representatives will take part in the development of criteria used to evaluate the bids. The USEPA, as a federal agency, may be allowed to participate in the bid evaluation.

The estimated costs of the selected remedy, Alternative 4c, in 1998 dollars, are:

Onsite Debris Consolidation Option

Estimated Capital Cost:	$19,796,000
Estimated Operation and Maintenance Cost: (net present worth)	$ 404,000
Estimated Total Cost: (net present worth)	$20,200,000

Offsite Debris Disposal

Estimated Capital Cost:	$34,636,000
Estimated Operation and Maintenance Cost: (net present worth)	$ 124,000
Estimated Total Cost: (net present worth)	$34,760,000

2) Use of Permanent Solutions and Alternative Treatment or Resource Recovery Technologies to the Maximum Extent Practicable

Once the Army identified those alternatives that attain or, as appropriate, waive ARARs and that are protective of human health and the environment, the Army determined which alternative made use of permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. This determination was made by deciding which one of the identified alternatives provides the best balance of trade-offs among alternatives in terms of: (1) long-term effectiveness and permanence; (2) reduction of toxicity, mobility or volume through treatment; (3) short-term effectiveness (4) implementability; and (5) cost. The balancing test emphasized long-term effectiveness and permanence and the reduction of toxicity, mobility, and volume through treatment; and considered the preference for treatment as a principal element, the bias against off-site land disposal of untreated waste, and community and state acceptance. The selected remedy provides the best balance of trade-offs among the alternatives.

As described in Section IX, the remedial alternatives would provide varying degrees of protection with respect to protecting human health and the environment from potential risks. Human health risks associated with current use of the landfill sites are acceptable according to USEPA criteria. Potential risks include those caused by debris contaminants migrating to public groundwater supplies in the future.

None of the twelve remedial alternatives meet the statutory preference for treatment under CERCLA, because they do not contain provisions for treating contaminants or debris. Except for Alternative 1, No Action, all of the alternatives contain landfill capping or debris consolidation in a new landfill as a remedy for one or more of the debris disposal areas. Landfill capping and containment in a new landfill will reduce infiltration to landfill materials and resulting leaching of contaminants, and thus reduce contaminant mobility.

Alternative 1 has the least likelihood for adverse effects during implementation because no action is proposed. In general, the degree of short-term effectiveness decreases with the numerical value of the remaining alternatives (i.e., Alternatives 2 through 4, 4a, 4b, 4c, and 5

through 9) because increasing amounts of debris would be disturbed via capping or removal. A Health and Safety Plan would be followed during performance of remedial activities, and during environmental monitoring to minimize risk of site hazards to workers.

Remedial actions involved in all alternatives except Alternative 1, including landfill capping, debris removal and transport, and new landfill construction can be easily designed and implemented. The activities can be completed using standard construction procedures and conventional earthmoving equipment. Many qualified engineering and construction companies are available.

The alternatives that include onsite debris consolidation (i.e., Alternatives 4, 4a, 4b, 4c, 5, 6, 8, and 9) would require a long-term landfill leachate discharge agreement between the Army and the owner of the POTW selected for discharge.

Alternative 1, the No Action alternative, does not require capital commitment or ongoing expenditure for operation and maintenance. Of the remaining alternatives, Alternatives 6 and 9, which include either in-place or on-site containment of debris from all seven disposal areas, are the most costly. Alternative 4c (assuming the onsite consolidation option) is the 3rd costliest of the alternatives. Alternative 4c includes containment of debris from the four largest debris disposal areas; approximately 96 percent of the total volume of debris at the seven debris disposal areas will be contained.

The Army believes Alternative 4c provides the best balance among the alternatives that are protective and attain ARARs. Alternative 4c offers potential long-term effectiveness with little potential for short-term risk. The alternative is readily implementable. It's cost will be verified by the Army to provide best value during a formal bidding process. During the bid evaluation, the Army will choose between the onsite debris consolidation and the offsite debris disposal options. Alternative 4c most closely addresses comments expressed by the community with respect to desired actions at the seven disposal areas. State and community acceptance were weighed heavily in the Army's decision to select Alternative 4c.

3) Satisfying the Preference for Treatment Which Permanently and Significantly Reduces the Toxicity, Mobility, and Volume of Hazardous Substances as a Principal Element

The principal element of the selected remedy is source control by containment of debris in a landfill with a cap and bottom liner. This element addresses the primary potential threat at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. The principal potential threat is residential use of groundwater contaminated by debris. The selected remedy will control leaching of debris and release of contaminants to groundwater. Therefore, the selected remedy reduces contaminant mobility, but not by treatment.

XII DOCUMENTATION OF SIGNIFICANT CHANGES

A Proposed Plan for SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41 was released for public comment in December 1997. The Plan identified Alternative 4a as the preferred alternative. Alternative 4a consists of no action at SA 6, surface debris removal at AOC 11, SA 12, and AOC 41 (disposal in consolidation landfill), and excavation and consolidation of debris at AOCs 9 and 40, and SA 13. During the public comment period, area residents voiced strong opposition to the location of the proposed consolidation landfill near the existing Shepley's Hill Landfill. Public comments and Army responses are included in Appendix C of this document.

In response to public opposition to the original proposal of Alternative 4a, the Army prepared a new Proposed Plan that presented Alternative 4c as the preferred alternative. The new Plan was made available to the public in November 1998. The comments received during the second public comment period are generally in favor of the preferred alternative.

In the new Proposed Plan, remedies for SA 12 and AOC 41 were to be conducted as non-CERCLA actions. The remedies for SA 12 and AOC 41 currently remain the same, but will now be conducted as CERCLA actions.

XIII. STATE ROLE

The Commonwealth of Massachusetts has reviewed the alternatives presented in the FS and Proposed Plan, and concurs with the selected remedy for SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. The MADEP has been involved in the project as a member of the Devens Base Closure Team. The Commonwealth has also reviewed the debris disposal area site investigation reports, FS report, and FS Addendum report to determine if the selected remedy complies with applicable or relevant and appropriate laws and regulations of the Commonwealth. A copy of the Declaration of State Concurrence is attached as Appendix E.

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APPENDIX A – FIGURES

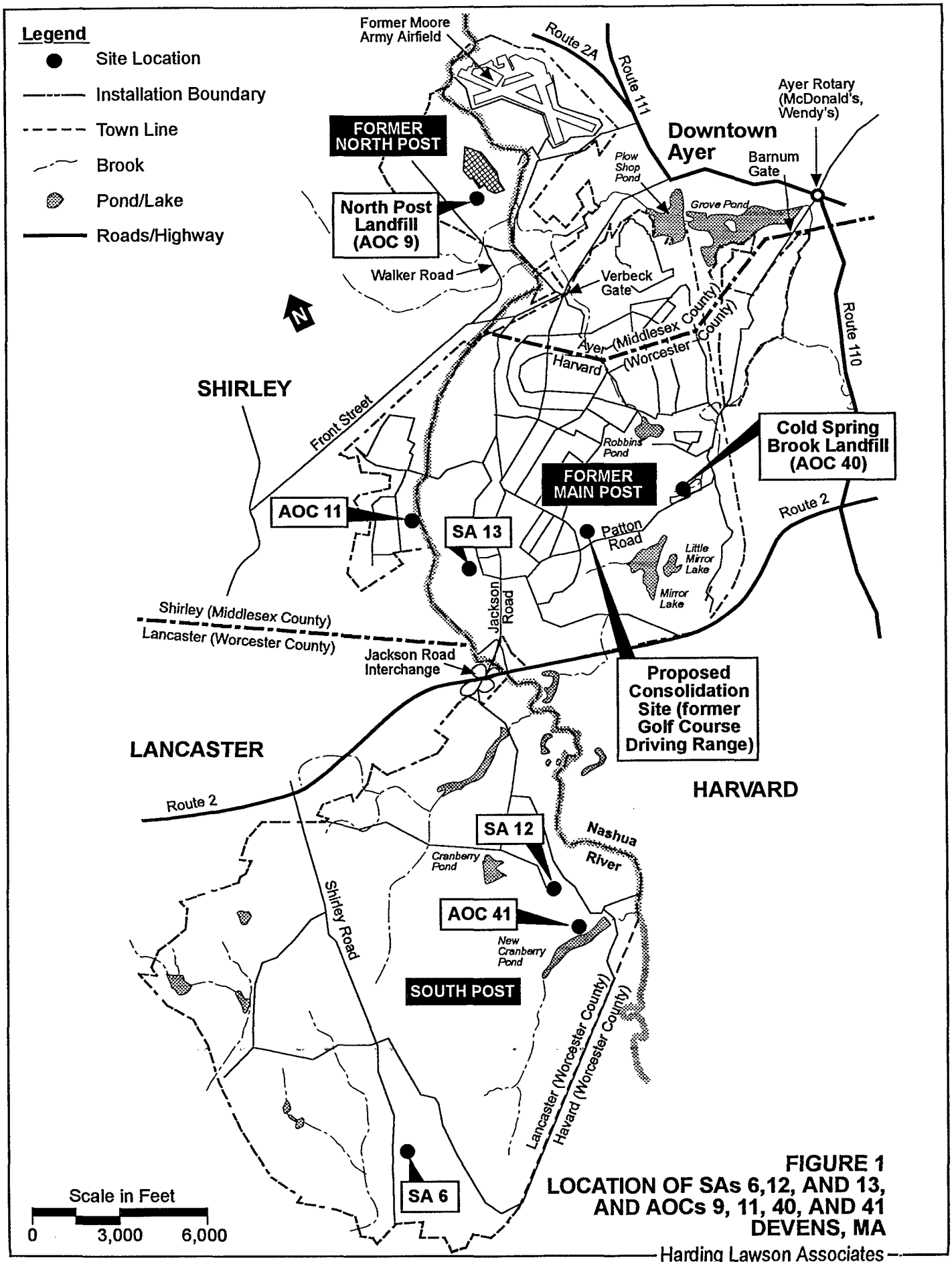


FIGURE 1
LOCATION OF SAs 6,12, AND 13, AND AOCs 9, 11, 40, AND 41
DEVENS, MA

Harding Lawson Associates

W9903001

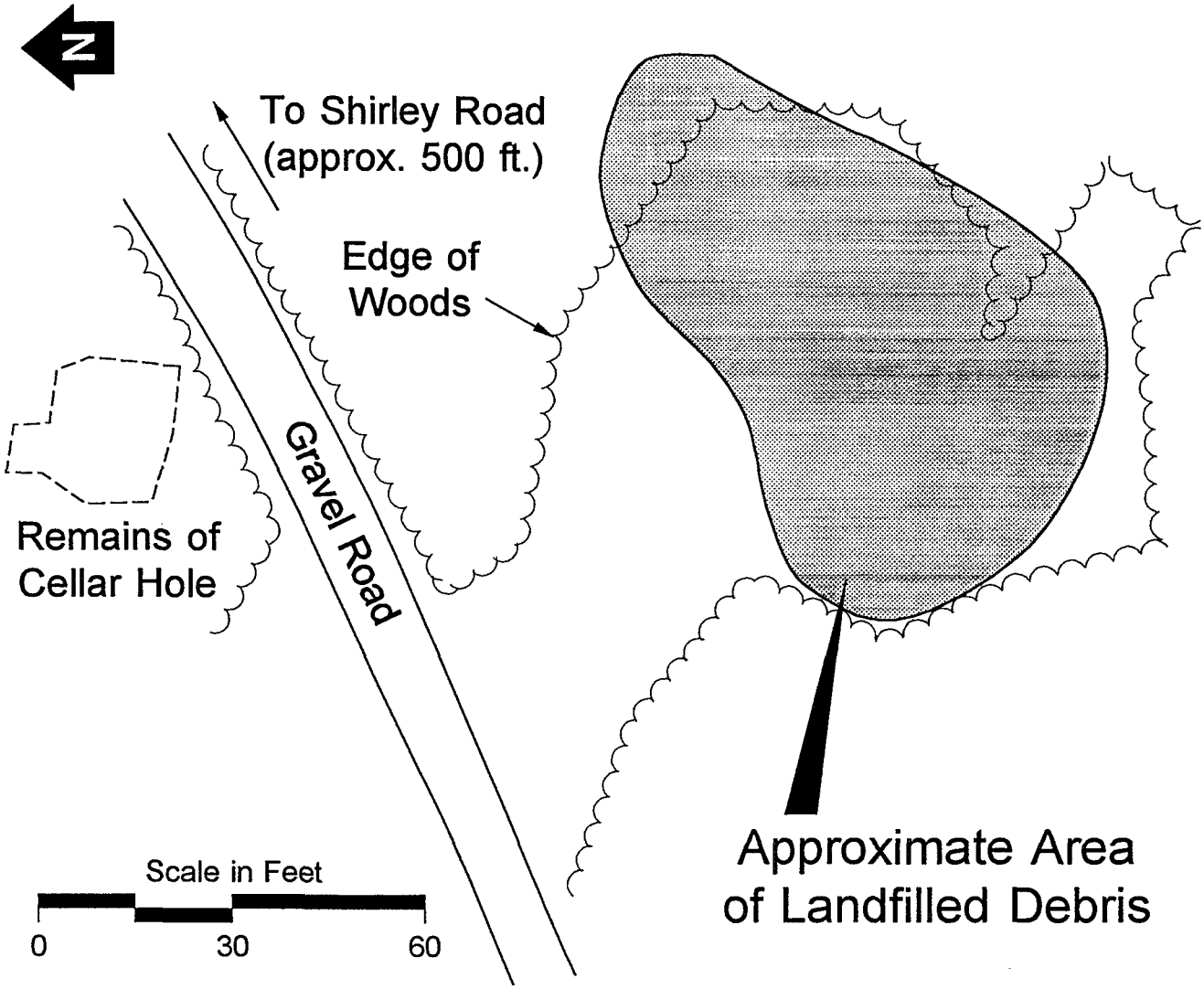


FIGURE 2
SA 6 SITE MAP
DEVENS, MA

Harding Lawson Associates

W9903001

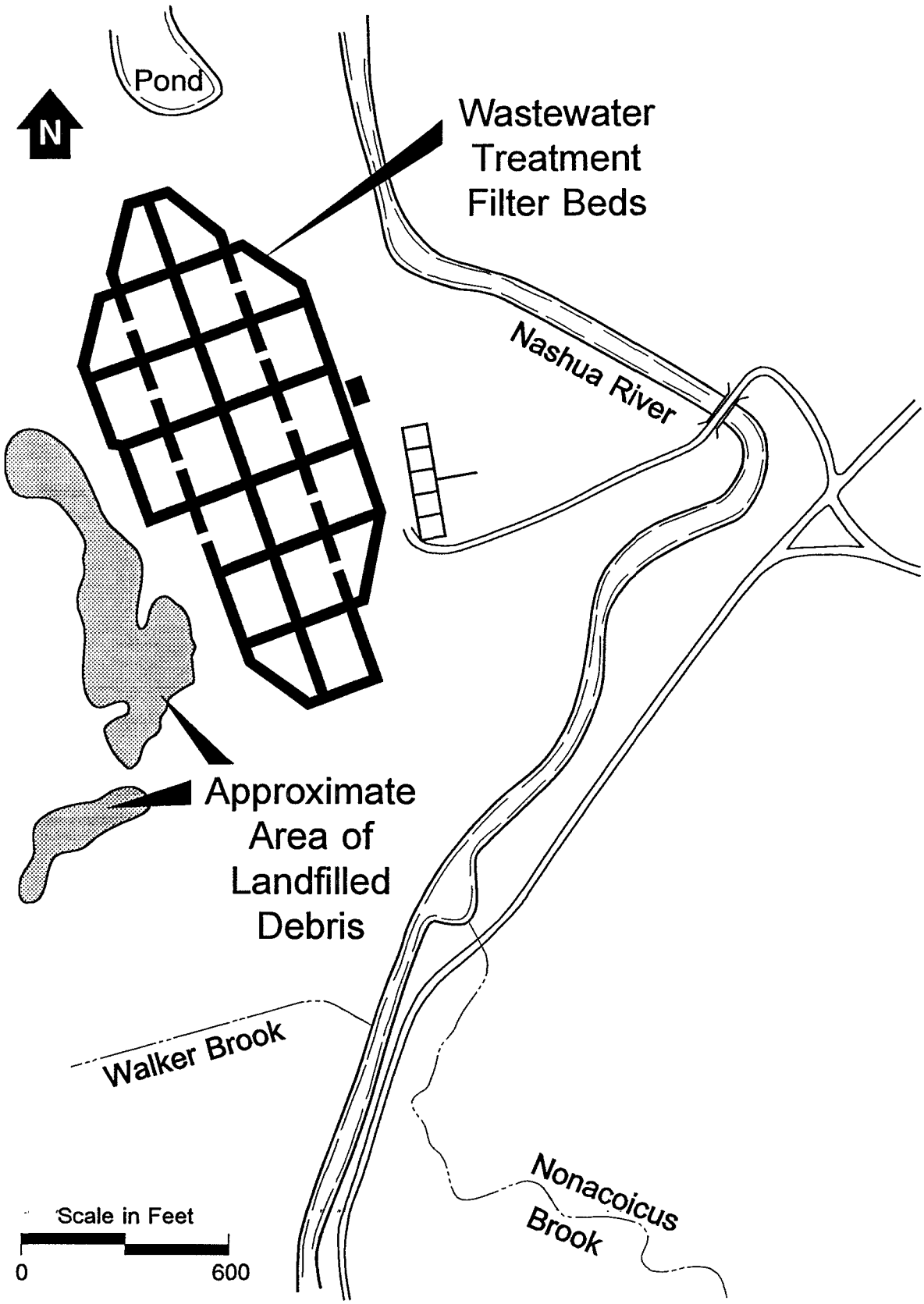


FIGURE 3
AOC 9 SITE MAP
DEVENS, MA

Harding Lawson Associates

W9903001

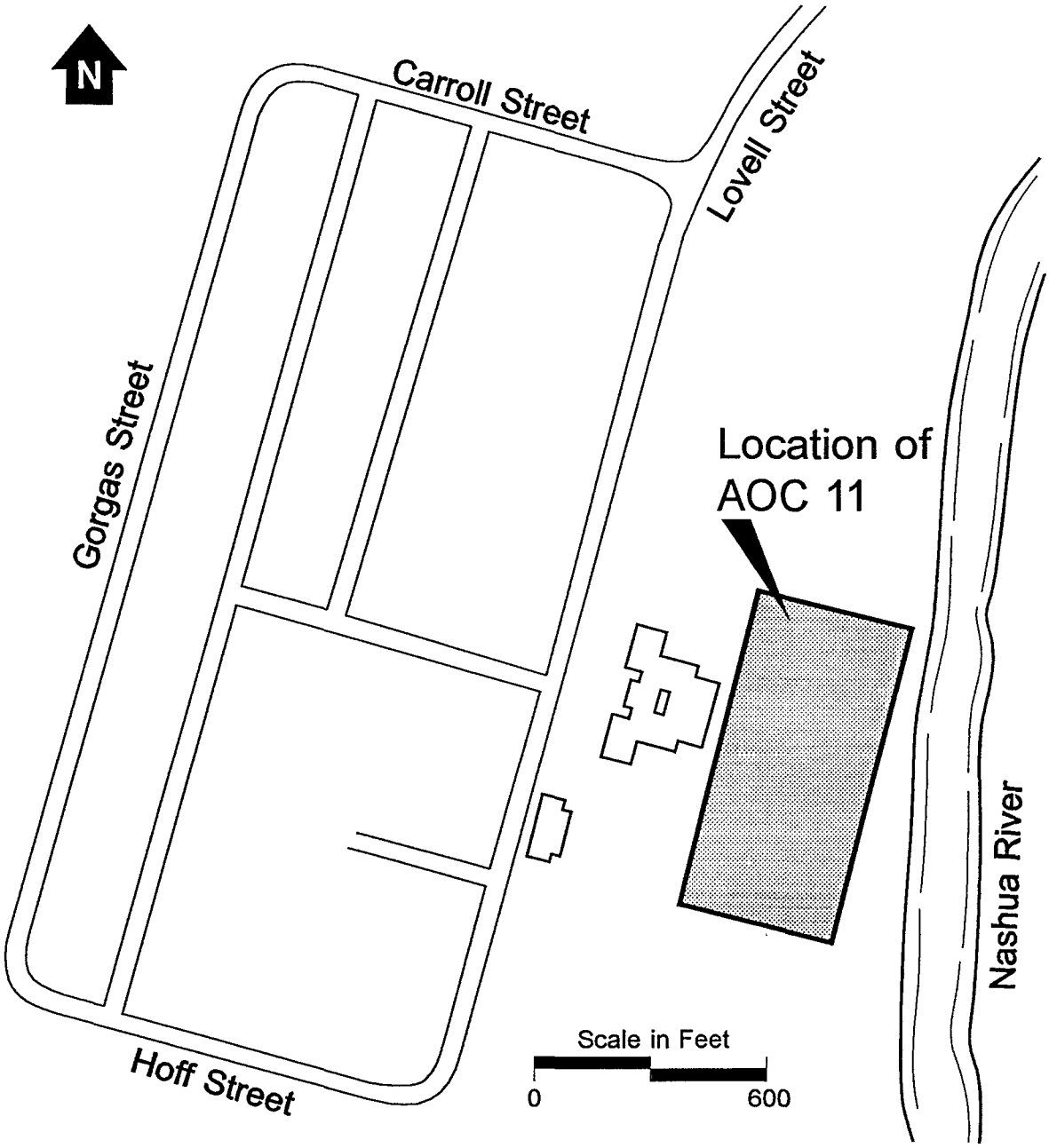


FIGURE 4
AOC 11 SITE MAP
DEVENS, MA

Harding Lawson Associates

W9903001

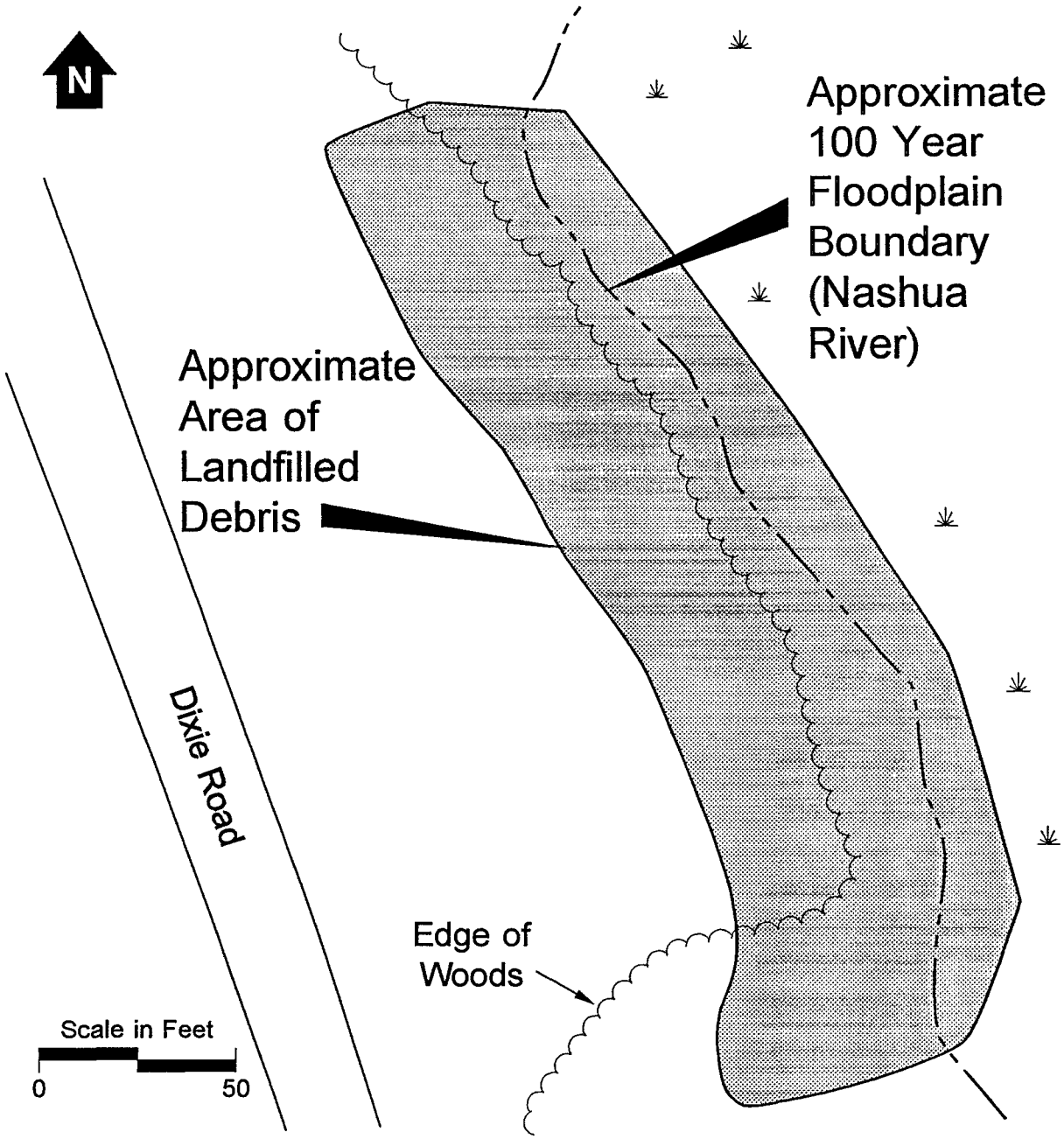


FIGURE 5
SA 12 SITE MAP
DEVENS, MA

Harding Lawson Associates

W9903001

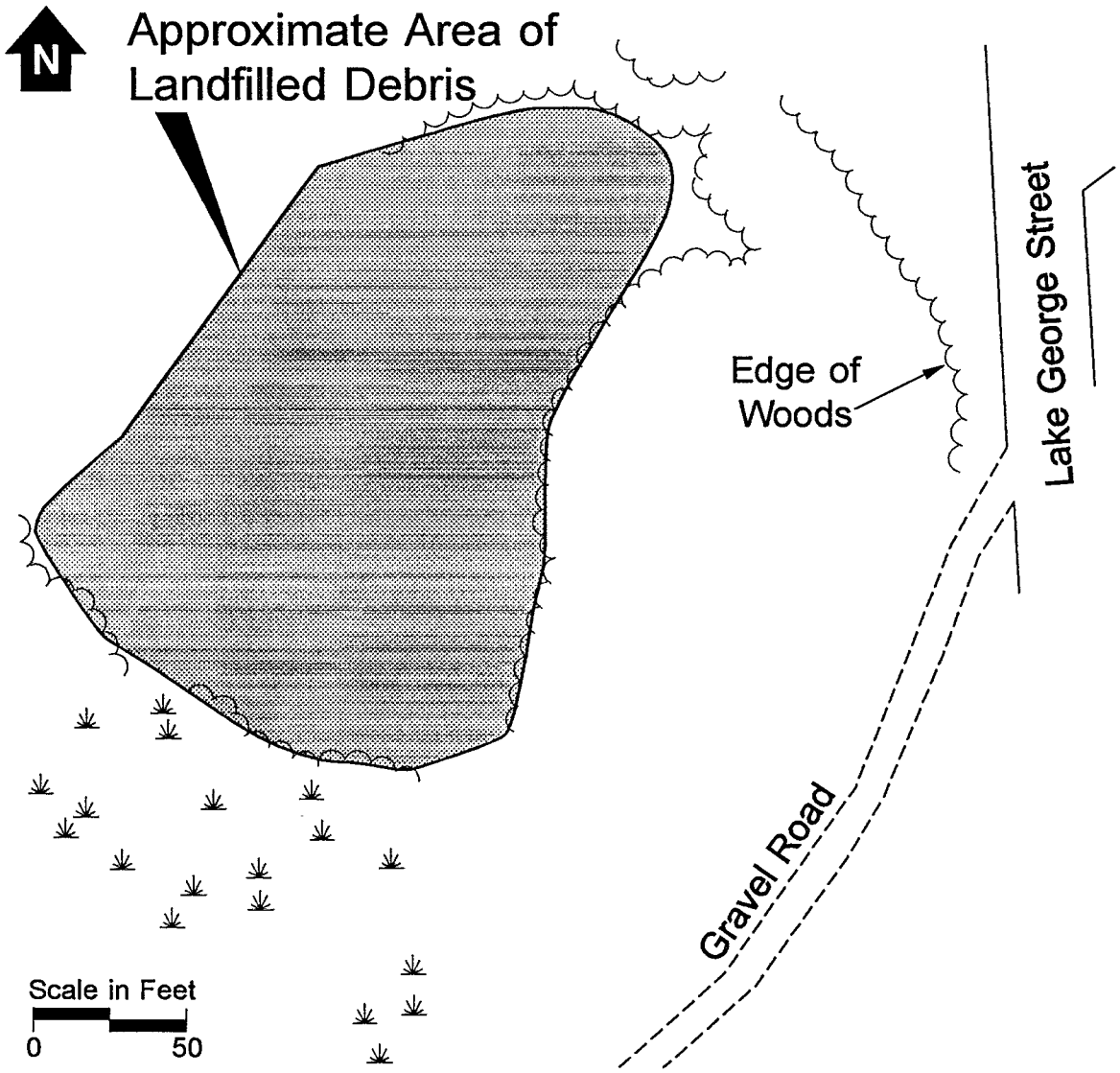


FIGURE 6
SA 13 SITE MAP
DEVENS, MA

Harding Lawson Associates

W9903001

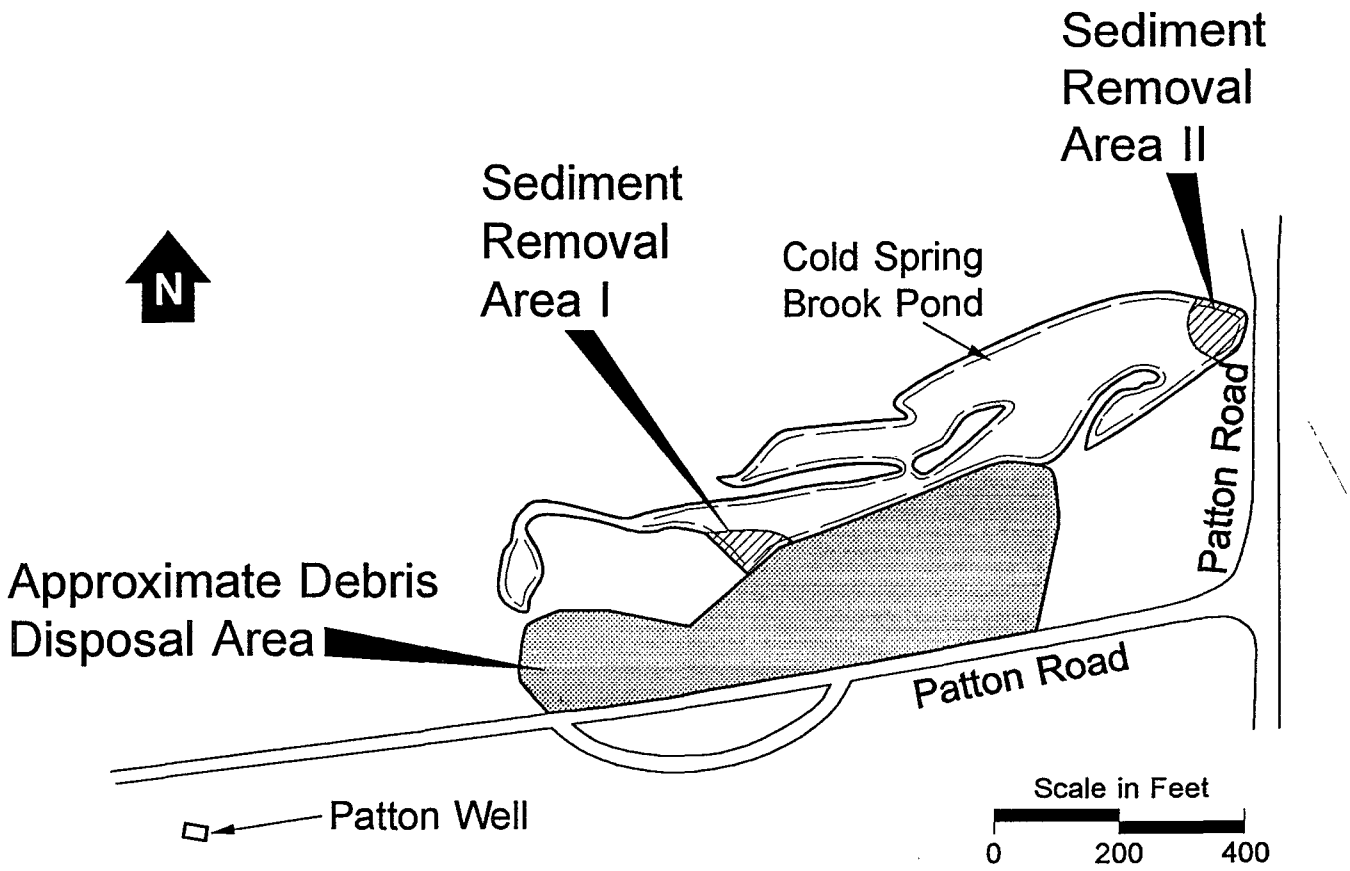


FIGURE 7
AOC 40 SITE MAP
DEVENS, MA

Harding Lawson Associates

W9903001

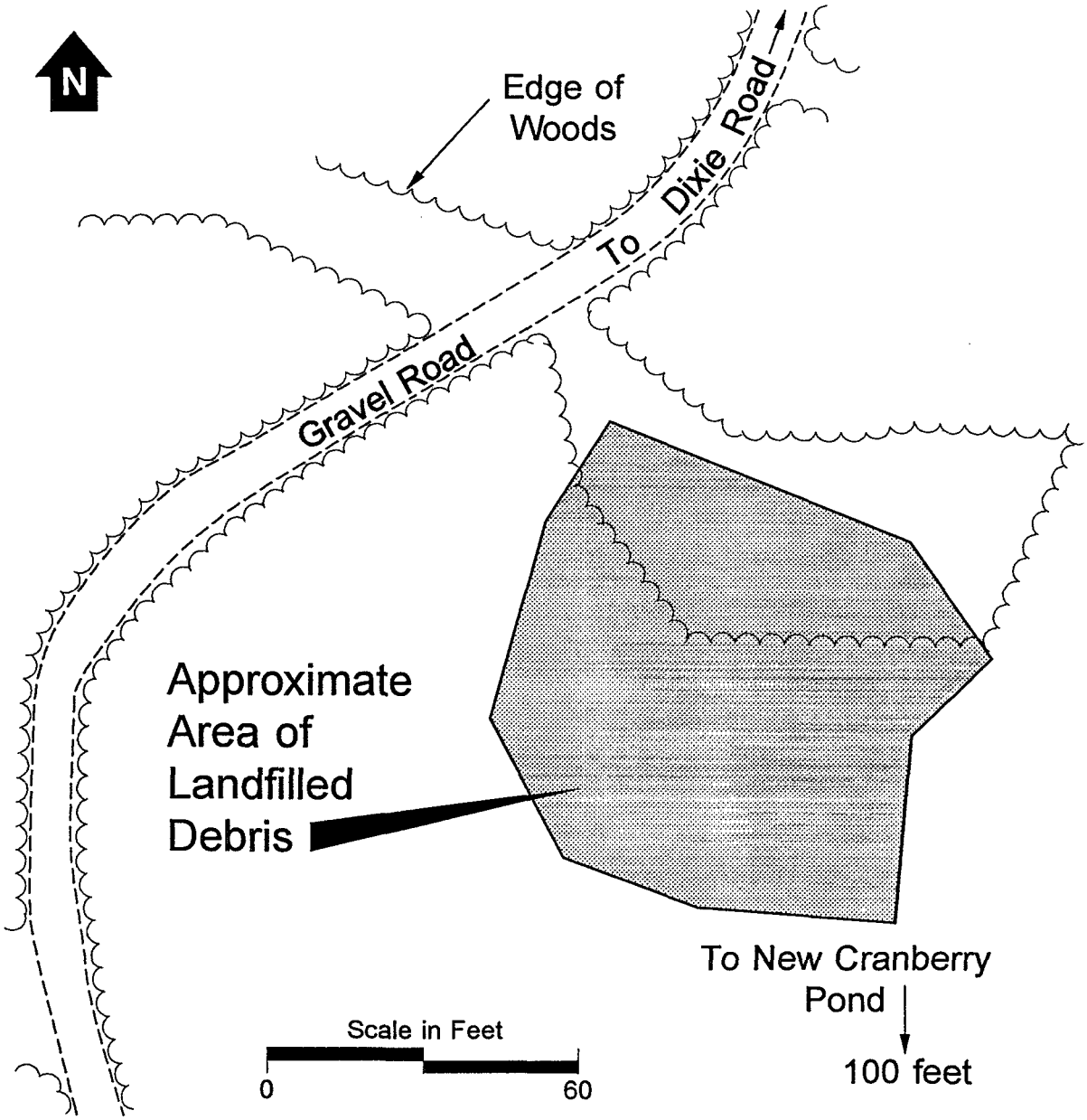


FIGURE 8
AOC 41 SITE MAP
DEVENS, MA

Harding Lawson Associates

W9903001

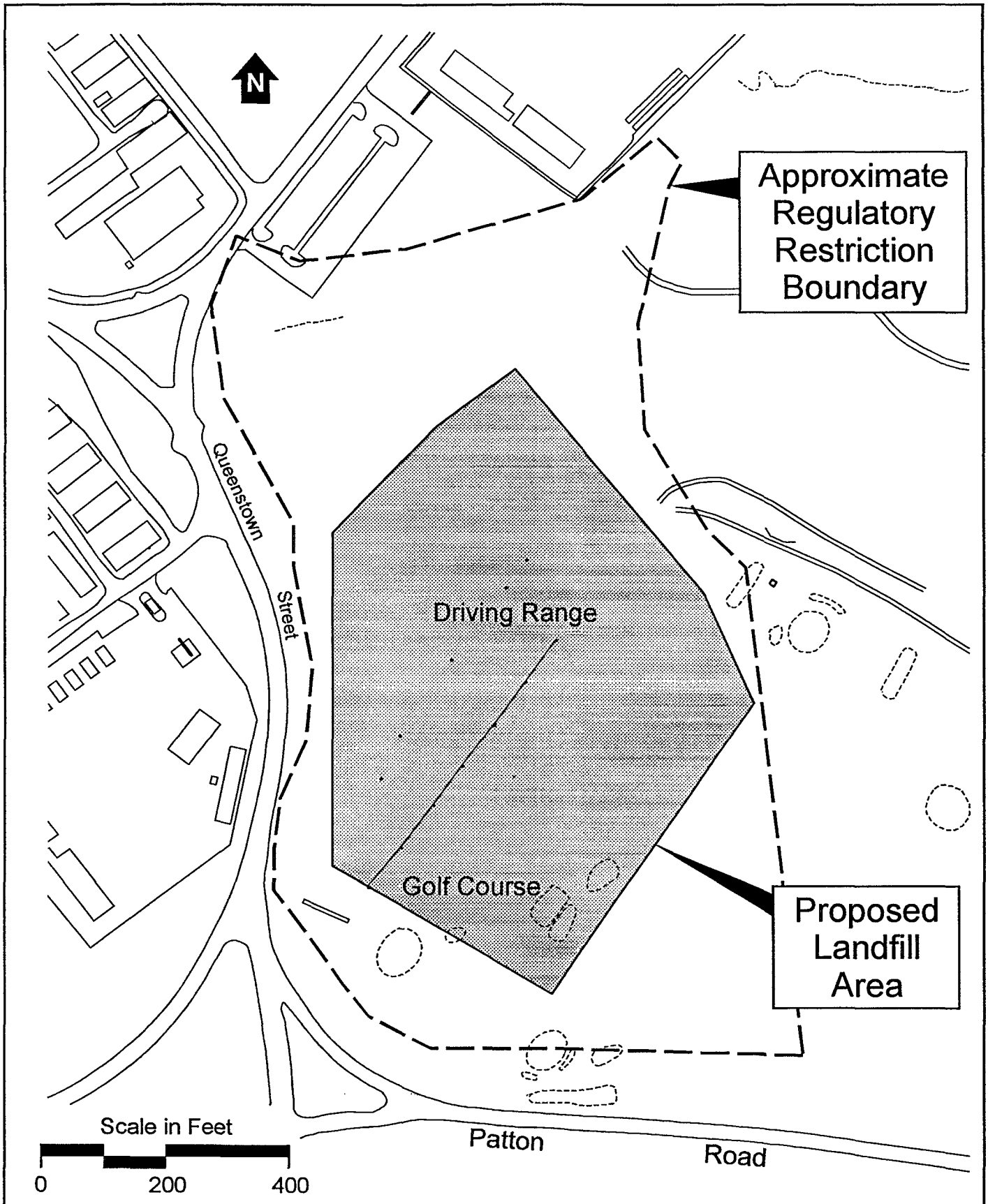


FIGURE 9
GOLF COURSE DRIVING RANGE SITE MAP
DEVENS,MA

Harding Lawson Associates

W9903001

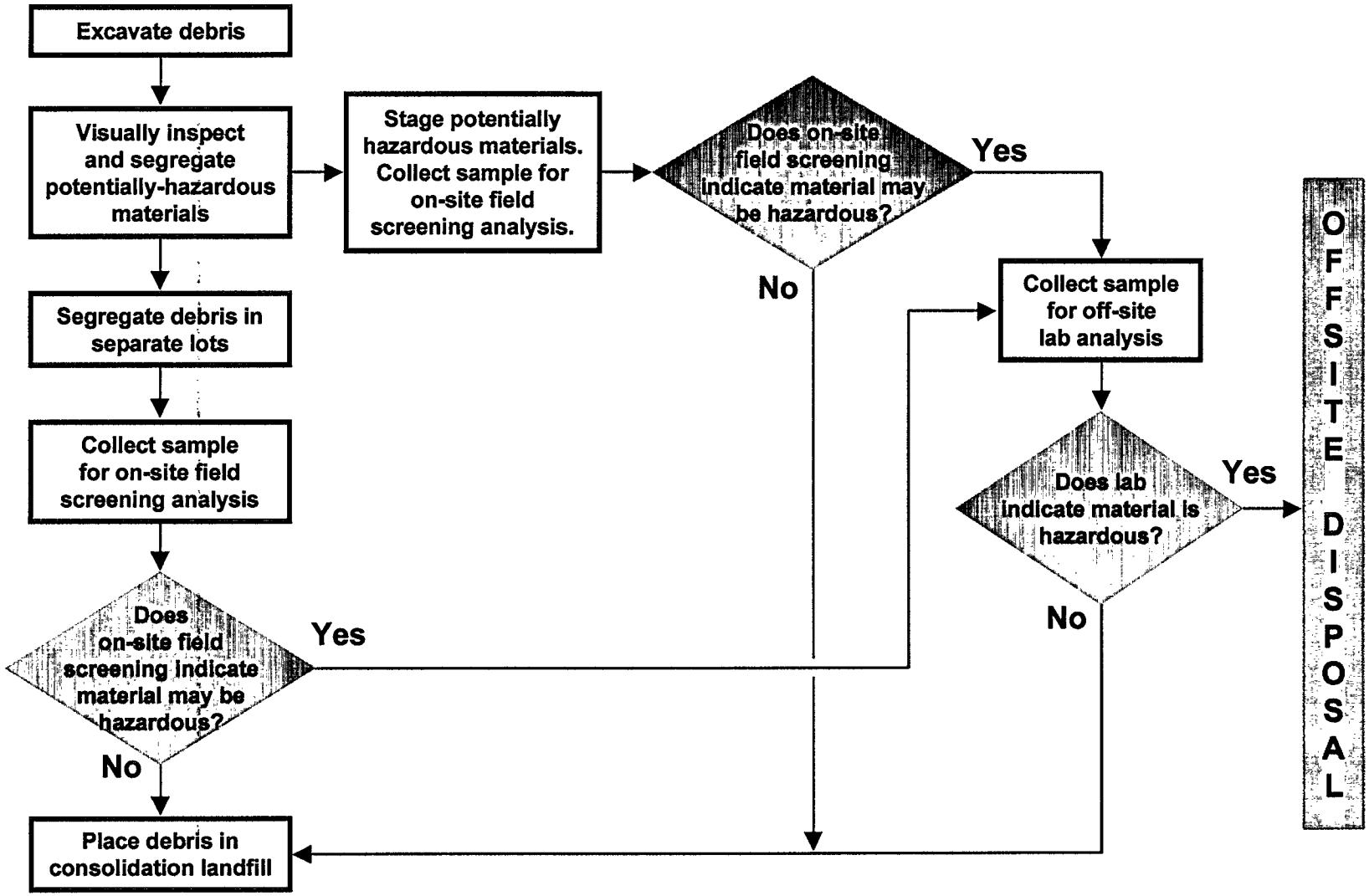
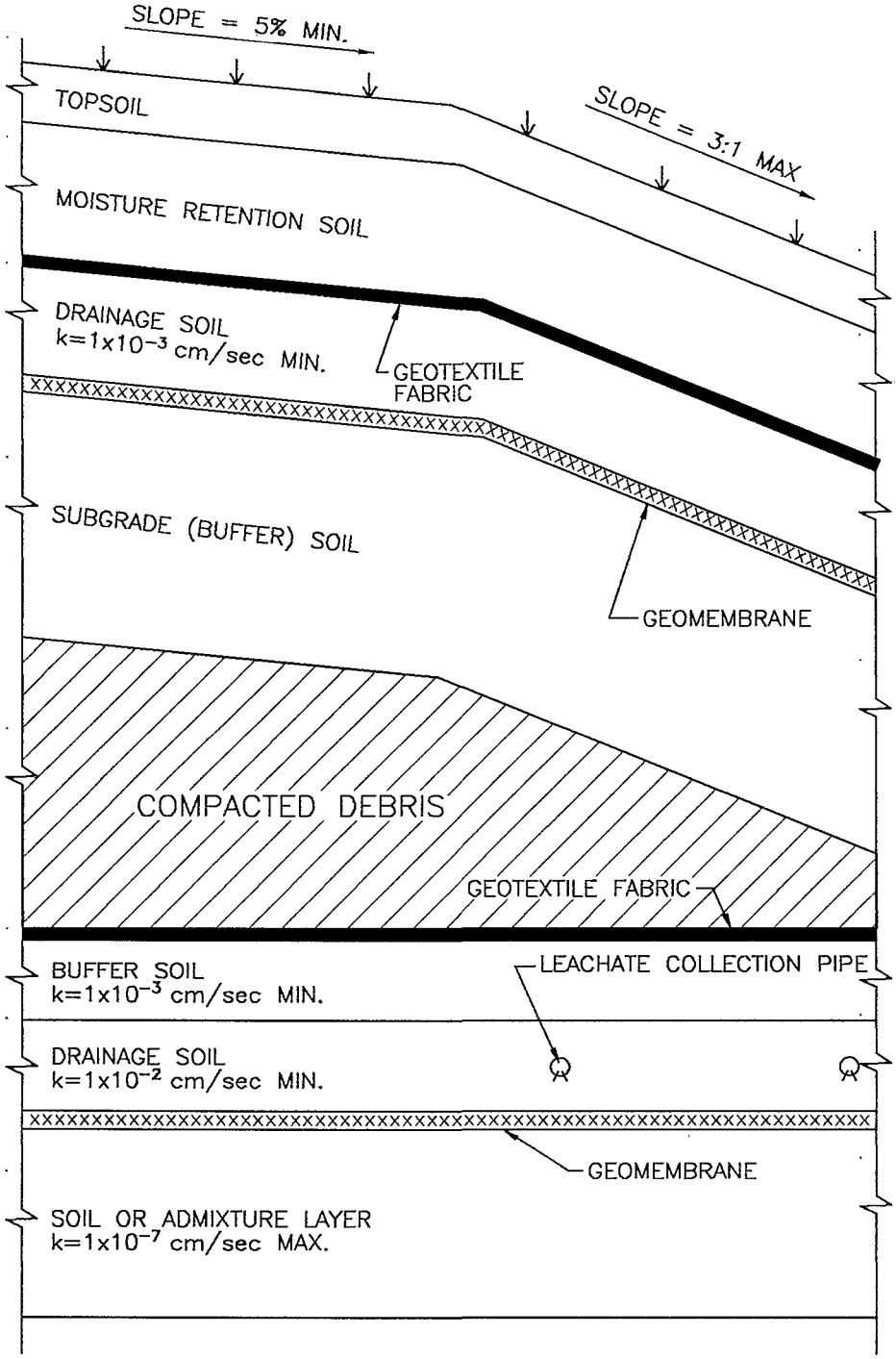


FIGURE 10
CONCEPTUAL DEBRIS SCREENING FLOW CHART
DEVENS, MA

Harding Lawson Associates

W9903001



NOTES:

1. LINER TO BE SLOPED @ 2% MIN.
2. LEACHATE COLLECTION PIPES TO BE SLOPED @ 1% MIN..
3. ALTERNATELY, A GEOSYNTHETIC CLAY LINER MAY BE CONSIDERED FOR THE SOIL OR ADMIXTURE LAYER.

NOT TO SCALE

FIGURE 11
CONSOLIDATION LANDFILL COVER AND LINER COMPONENTS
DEVENS, MA
Harding Lawson Associates

APPENDIX B – SYNOPSIS OF FEDERAL AND STATE ARARS FOR ALTERNATIVE 4C

TABLE B.1
SYNOPSIS OF FEDERAL AND STATE LOCATION-SPECIFIC ARARS FOR ALTERNATIVE 4C

RECORD OF DECISION
SAs 6, 12, AND 13 AND AOCS 9, 11, 40 AND 41
DEVENS, MA

REGULATORY AUTHORITY	LOCATION CHARACTERISTIC	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
Federal	Floodplains	Floodplain Management Executive Order 11988 [40 CFR Part 6, Appendix A]	Applicable AOC 9 AOC 11 AOC 40	Requires federal agencies to evaluate the potential adverse effects associated with direct and indirect development of a floodplain. Alternatives that involve modifiation/construction within a floodplain may not be selected unless a determination is made that no practicable alternative exists. If no practicable alternative exists, potential harm must be minimized and action taken to restore and preserve the natural and beneficial values of the floodplain.	Drum removal and hot-spot sediment removal will be designed to minimize alteration/destruction of floodplain area. If this alternative is chosen, wetlands adversely affected by remedial action will be restored to the extent necessary.
	Wetlands	Protection of Wetlands Executive Order 11990 [40 CFR Part 6, Appendix A]	Applicable AOC 9 AOC 11 AOC 40	Under this Order, federal agencies are required to minimize the destruction, loss, or degradation of wetlands, and preserve and enhance natural and beneficial values of wetlands. If remediation is required within wetland areas, and no practical alternative exists, potential harm must be minimized and action taken to restore natural and beneficial values.	Drum removal and hot-spot sediment removal will be designed to minimize alteration/destruction of floodplain area. If this alternative is chosen, wetlands adversely affected by remedial action will be restored to the extent necessary.
	Wetlands, Aquatic Ecosystem	Clean Water Act, Dredge or Fill Requirements Section 404 [40 CFR Part 230]	Relevant and Appropriate AOC 9 AOC 11 AOC 40	Section 404 of the Clean Water Act regulates the discharge of dredged or fill materials to U.S. waters, including wetlands. Filling wetlands would be considered a discharge of fill materials. Guidelines for Specification of Disposal Sites for Dredged or Fill material at 40 CFR Part 230, promulgated under Clean Water Act Section 404(b)(1), maintain that no discharge of dredged or fill material will be permitted if there is a practical alternative that would have less effect on the aquatic ecosystem. If adverse impacts are unavoidable, action must be taken to restore, or create alternative wetlands.	The removal of drums/sediments will be designed to minimize placement or fill in wetland areas. If this alternative is chosen, the affected areas will be restored to the extent necessary.

TABLE B.1
SYNOPSIS OF FEDERAL AND STATE LOCATION-SPECIFIC ARARS FOR ALTERNATIVE 4C

RECORD OF DECISION
SAs 6, 12, AND 13 AND AOCS 9, 11, 40 AND 41
DEVENS, MA

REGULATORY AUTHORITY	LOCATION CHARACTERISTIC	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
Federal	Surface Waters, Endangered Species, Migratory Species	Fish and Wildlife Coordination Act [16 USC 661 et. seq.]	Relevant and Appropriate AOC 9 AOC 11 AOC 40 SA 13	Actions that affect species/habitat require consultation with U.S. Department of Interior, U.S. Fish and Wildfire Service, National Marine Fisheries Service, and/or state agencies, as appropriate, to ensure that proposed actions do not jeopardize the continued existence of the species or adversely modify or destroy critical habitat. The effects of water-related projects on fish and wildlife resources must be considered. Action must be taken to prevent, mitigate, or compensate for project-related damages or losses to fish and wildlife resources. Consultation with the responsible agency is also strongly recommended for on-site actions. Under 40 CFR Part 300.38, these requirements apply to all response activities under the National Contingency Plan.	To the extent necessary, action will be taken to develop measures to prevent, mitigate, or compensate for project related impacts to habitat and wildlife. The U.S. Fish and Wildlife Service, acting as a review agency for the USEPA, will be kept informed of proposed remedial actions.
	Endangered Species	Endangered Species Act [50 CFR Parts 17.11-17.12]	Applicable AOC 9 AOC 11 AOC 40 SA 13 Consolidation Facility	This act requires action to avoid jeopardizing the continued existence of listed endangered or threaten species or modification of their habitat.	The protection of endangered species and their habitats will be considered during excavation activities and cover installation.
	Atlantic Flyway, Wetlands, Surface Waters	Migratory Bird Treaty Act [16 USC 703 et seq.]	Relevant and Appropriate AOC 11	The Migratory Bird Treaty Act protects migratory birds, their nests, and eggs. A depredation permit is required to take, possess, or transport migratory birds or disturb their nests, eggs, or young.	Remedial actions will be performed to protect migratory birds, their nests, and eggs.

TABLE B.1
SYNOPSIS OF FEDERAL AND STATE LOCATION-SPECIFIC ARARS FOR ALTERNATIVE 4C

RECORD OF DECISION
SAs 6, 12, AND 13 AND AOCS 9, 11, 40 AND 41
DEVENS, MA

REGULATORY AUTHORITY	LOCATION CHARACTERISTIC	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
State	Floodplains, Wetlands, Surface Waters	Massachusetts Wetland Protection Act and regulations [MGL c. 131 s. 40; 310 CMR 10.00]	Applicable AOC 9 AOC 11 AOC 40 SA 13	These regulations include standards on dredging, filling, altering, or polluting inland wetlands and protected areas (defined as areas within the 100-year floodplain). A Notice of Intent (NOI) must be filed with the municipal conservation commission and a Final Order of Conditions obtained before proceeding with the activity. A Determination of Applicability or NOI must be filed for activities such as excavation within a 100 foot buffer zone. The regulations specifically prohibit loss of over 5,000 square feet of bordering vegetated wetland. Loss may be permitted with replication of any lost area within two growing seasons.	All work to be performed within wetlands and the 100 foot buffer zone will be in accordance with the substantive requirements of these regulations.
	Endangered Species	Massachusetts Endangered Species Regulations [321 CMR 8.00]	Applicable AOC 9 AOC 11 AOC 40 SA 13 Consolidation Facility	Actions must be conducted in a manner that minimizes the impact to Massachusetts-listed rare, threatened, or endangered species, and species listed by the Massachusetts Natural Heritage Program.	The protection of state listed endangered species (in particular the Grasshopper Sparrow at the Consolidation Facility) will be considered during the design and implementation of this alternative.

Notes:

AWQC = Ambient Water Quality Criteria
CFR = Code of Federal Regulations
CMR = Code of Massachusetts Rules
CWA = Clean Water Act
DOI = Department of the Interior
FWS = Fish and Wildlife Services
MEPA = Massachusetts Environmental Policy Act
MGL = Massachusetts General Laws
NMFS = National Marine Fisheries Service
USC = United States Code

Note: A Record Notice of Landfill Operation for AOC 11 is not necessary with Alternative 4c.

TABLE B.2
SYNOPSIS OF FEDERAL AND STATE CHEMICAL-SPECIFIC ARARS FOR ALTERNATIVE 4C

RECORD OF DECISION
SAs 6, 12, AND 13 AND AOCS 9, 11, 40 AND 41
DEVENS, MA

REGULATORY AUTHORITY	LOCATION CHARACTERISTIC	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
Federal	Surface water	Clean Water Act, Ambient Water Quality Criteria [40 CFR 131; Quality Criteria for Water 1986]	Relevant and Appropriate AOC 11 AOC 40	Federal Ambient Water Quality Criteria (AWQC) include (1) health-based criteria development for 95 carcinogenic and noncarcinogenic compounds and (2) acute and chronic toxicity values for the protection of aquatic life. AWQC for the protection of human health provide protective concentratons for exposure from ingesting contaminated water and contaminated aquatic organisms, and from ingesting contaminated aquatic organisms alone. Remedial actions involving contaminated surface water or discharge of contaminants to surface water must consider the uses of the water and the circumstances of the release or threatened release.	Remedial actions will be performed in a manner to prevent AWQC exceedances in surface water. Activities at AOC 11 will be performed to prevent AWQC exceedances in the Nashua River. Removal of sediment at AOC 40 will be performed in a manner to prevent AWQC exceedances in Cold Spring Brook Pond. Supernatant from dredged spoil will be monitored to prevent AWQC exceedances in Cold Spring Brook Pond.
	Groundwater	Safe Drinking Water Act, National Primary Drinking Water Regulations, MCLs and MCLGs (40 CFR Parts 141.60 - 141.63 and 141.50 - 141.52]	Relevant and Appropriate AOC 40	The National Primary Drinking Water Regulations establish Maximum Contaminant Levels (MCLs) and Maximum Contaminant Level Goals (MCLGs) for several common organic and inorganic contaminants. MCLs specify the maximum permissible concentrations if contaminants in public drinking water supplies. MCLs are federally enforceable standards based in part on the availability and cost of treatment techniques. MCLGs specify the maximum concentration at which no known or anticipated adverse effect on humans will occur. MCGLs are non-enforceable health based goals set equal to or lower than MCLs.	At AOC 40 the MCL for bis(2-ethylhexyl)phthalate will be met under average scenario, and the MCL for arsenic will be met under average and maximum scenario. MCLs are not exceeded at Patton Well.

TABLE B.2
SYNOPSIS OF FEDERAL AND STATE CHEMICAL-SPECIFIC ARARS FOR ALTERNATIVE 4C

RECORD OF DECISION
SAs 6, 12, AND 13 AND AOCS 9, 11, 40 AND 41
DEVENS, MA

REGULATORY AUTHORITY	LOCATION CHARACTERISTIC	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
State	Surface water	Massachusetts Surface Water Quality Standards [314 CMR 4.00]	Relevant and Appropriate AOC 11 AOC 40	Massachusetts Surface Water Quality Standards designate the most sensitive uses for which surface waters of the Commonwealth are to be enhanced, maintained, and protected, and designate minimum water quality criteria for sustaining the designated uses. Surface waters at Fort Devens are classified as Class B. Surface waters assigned to this class are designated as habitat for fish, other aquatic life and wildlife, and for primary and secondary contact recreation. These criteria supersede federal AWQC only when they are more stringent (more protective) than the AWQC.	At AOC 11 activities will be performed in a manner to prevent exceedances of surface water quality in the Nashua River. At AOC 40 sediment removal will be performed in a manner to prevent exceedances of Surface Water Quality Standards in Cold Spring Brook Pond. Supernatant from dredged spoil dewatering will be monitored to prevent exceedances in the pond. To the extent necessary, Surface Water Quality Standards will be used to develop discharge limitations.
	Groundwater	Massachusetts Groundwater Quality Standards [314 CMR 6.00]	Relevant and Appropriate AOC 40	These standards designate and assign uses for which groundwaters of the Commonwealth shall be maintained and protected, and set forth water quality criteria necessary to maintain the designated uses. Groundwater at Fort Devens is classified as Class I, fresh groundwaters designated as a source of potable water supply.	At AOC 40 the MCL for bis(2-ethylhexyl)phthalate will be met under average scenario, and the MCL for arsenic will be met under average and maximum scenario. MCLs are not exceeded at Patton Well.
	Groundwater	Massachusetts Drinking Water Regulations [310 CMR 22.00]	Relevant and Appropriate AOC 40	These regulations list Massachusetts MCLs which apply to drinking water distributed through a public water system.	At AOC 40 the MCL for bis(2-ethylhexyl)phthalate will be met under average scenario, and the MCL for arsenic will be met under average and maximum scenario. MCLs are not exceeded at Patton Well.

Notes:

AWQC = Ambient Water Quality Criteria
CERCLA = Comprehensive Environmental Response, Compensation, and Liability Act
CFR = Code of Federal Regulations
CMR = Code of Massachusetts Rules
CWA = Clean Water Act
MCL = Maximum Contaminant Rules
MCLG = Maximum Contaminant Level Goal
MMCL = Massachusetts Maximum Contaminant Level
NPDWR = National Primary Drinking Water Regulations
SDWA = Safe Drinking Water Act
SMCL = Secondary Maximum Contaminant Level

Note: A Record Notice of Landfill Operation for AOC 11 is not necessary with Alternative 4c.

TABLE B.3
SYNOPSIS OF FEDERAL AND STATE ACTION-SPECIFIC ARARS FOR ALTERNATIVE 4C

RECORD OF DECISION
SAs 6, 12, AND 13 AND AOCS 9, 11, 40 AND 41
DEVENS, MA

REGULATORY AUTHORITY	LOCATION CHARACTERISTIC	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
Federal	Construction over/in navigable waters	Rivers and Harbors Act of 1899 [33 USC 401 et seq.]	Relevant and Appropriate AOC 40 AOC 11	Section 10 of the Rivers and Harbors Act of 1899 requires an authorization from the Secretary of the Army, acting through the U.S. Army Corps of Engineers (USACE), for the construction of any structure in or over any "navigable water of the U.S."; the excavation from or deposition of material in such waters, or any obstruction of alteration in such waters.	Excavating, filling, and disposal activities will be conducted to meet the substantive criteria and standards of these regulations.
	Control of surface water runoff, Direct discharge to surface water	Clean Water Act NPDES Permit Program [40 CFR 122, 125]	Relevant and Appropriate AOC 9 AOC 11 AOC 40 SA 13 Consolidation Facility	The National Pollutant Discharge Elimination System (NPDES) permit program specifies the permissible concentration or level of contaminants in the discharge from any point source, including surface runoff, to waters of the United States.	Construction activities will be controlled to meet USEPA discharge requirements. On-site discharge will meet the substantive requirements of these regulations.
	Land Disposal of Hazardous Wastes	Resource Conservation and Recovery Act (RCRA), Land Disposal Restrictions (LDRs); (40 CFR Part 268)	Applicable AOC 9 AOC 11 AOC 40 SA 13	Land disposal of RCRA hazardous wastes without specified treatment is restricted. Remedial actions must be evaluated to determined if they constitute "placement" and if LDRs are applicable. The LDRs requie that wastes must be treated either by a treatment technology or to a specific concentration prior to disposal in a RCRA Subtitle C permitted facility.	If it is determined that materials excavated from AOCs 9, 11, 40, or SA 13 are hazardous materials subject to LDRs, the materials will be handled and disposed of in compliance with these regulations.
	Disposal of PCB-contaminated wastes	Toxic Substance Control act Regulations [40 CFR Part 761]	Applicable AOC 9 AOC 11 AOC 40 SA 13	Establish prohibitions of and requirements for the manufacturing, processing, distribution in commerce, use, disposal, storage and marking of PCB items. Sets forth the "PCB Spill Cleanup Policy."	If it is determined that materials excavated from AOCs 9, 11, 40 or SA 13 are contaminated with PCBs at concentrations of 50 ppm or greater, the materials will be handled and disposed of in compliance with these regulations.
State	Solid Waste Landfill Siting	Massachusetts Solid Waste Facilities Site Regulations [310 CMR 16.00]	Applicable Consolidation Facility	These regulations outline the requirements for selecting the site of a new solid waste landfill for the Commonwealth of Massachusetts.	The consolidation facility will be sited in accordance with these regulations.

TABLE B.3
SYNOPSIS OF FEDERAL AND STATE LOCATION-SPECIFIC ARARS FOR ALTERNATIVE 4C

RECORD OF DECISION
SAs 6, 12, AND 13 AND AOCS 9, 11, 40 AND 41
DEVENS, MA

REGULATORY AUTHORITY	LOCATION CHARACTERISTIC	REQUIREMENT	STATUS	REQUIREMENT SYNOPSIS	ACTION TO BE TAKEN TO ATTAIN REQUIREMENT
State	Solid Waste Landfill Construction, Operation, Closure, and Post-Closure Care	Massachusetts Solid Waste Management Regulations [310 CMR 19.000]	Relevant and Appropriate AOC 9, AOC 11, SA 12, SA 13 Consolidation Facility	These regulations outline the requirements for construction, operation, closure, and post closure at solid waste management facilities in the Commonwealth of Massachusetts.	Final closure and post-closure plans will be prepared and submitted to satisfy the requirements of 310 CMR 19.021 for AOCs 9, 11, and 40, and SAs 12 and 13. The consolidation landfill will be constructed, operated, and closed in conformance with the regulations at 310 CMR 19.000. A Record Notice of Landfill Operation will be filed for AOC 11 in accordance with 310 CMR 19.141.
	Activities that potentially affect surface water quality	Massachusetts Water Quality Certification and Certification for Dredging [314 CMR 9.00]	Relevant and Appropriate AOC 40	For activities that require a MADEP Wetlands Order of Conditions to dredge or fill navigable waters or wetlands, a Chapter 91 Waterways License, a USACE permit or any major permit issued by USEPA (e.g., Clean Water Act NPDES permit), a Massachusetts Division of Water Pollution Control Water Quality Certification is required pursuant to 314 CMR 9.00.	Excavation, filling, and disposal activities will meet the substantive criteria and standards of these regulations. Remedial activities will be designed to attain and maintain Massachusetts Water Quality Standards in affected waters.
	Activities that affect ambient air quality	Massachusetts Air Pollution Control Regulations [310 CMR 7.00]	Applicable AOC 9 AOC 11 AOC 40 SA 13 Consolidation Facility	These regulations pertain to the prevention of emissions in excess of Massachusetts ambient air quality standards.	Remedial activities will be conducted to meet the standards for Visible Emissions (310 CMR 7.06); Dust, Odor, Construction and Demolition (310 CMR 7.09); Noise (310 CMR 7.10); and Volatile Organic Compounds (310 CMR 7.18).

Notes:

CFR = Code of Federal Regulations
CMR = Code of Massachusetts Rules
CWA = Clean Water Act
MADEP = Massachusetts Department of Environmental Protection
MGL = Massachusetts General Laws
NPEDES = National Pollutant Discharge Elimination System
RCLA = Comprehensive Environmental Response, Compensation, and Liability Act
USACE = U.S. Army Corps of Engineers
USC = United States Code

Note: A Record Notice of Landfill Operation for AOC 11 is not necessary with Alternative 4c.

APPENDIX C - RESPONSIVENESS SUMMARY

LANDFILL REMEDIATION, DEVENS, MASSACHUSETTS

RESPONSIVENESS SUMMARY

A. OVERVIEW

There have been two public comment periods during development of the preferred alternative for landfill remediation at Devens. At the time of the first public comment period, the Army's recommended alternative consisted of excavating and consolidating debris from AOCs 9 and 40, and from SA 13 into a new onsite landfill. The proposed site for the new landfill was the area near the existing Shepley's Hill Landfill. In addition, visible man-made surface debris and known surface soil hot spots from AOC 11 would be removed and placed in the consolidation landfill. At SA 12 and AOC 41, visible man-made surface debris and known surface soil hot spots would be removed and placed in the consolidation landfill as a non-CERCLA action. No action would be conducted at SA 6.

Judging from the comments received during the public comment period, area residents strongly opposed the proposed landfill location, even though the site meets MADEP regulatory requirements for landfill siting. The community favored debris excavation and disposal in an offsite landfill. The Army agreed to: (1) expand the site search for an onsite consolidation landfill, using "non-regulatory" and construction-ease criteria derived from public comments, (2) further evaluate the feasibility of disposing the debris offsite, and (3) re-evaluate the proposal for limited action at SA 12 and at AOCs 11 and 41.

The Army re-evaluated potential landfill sites originally considered, plus others, using "non-regulatory" and construction-ease criteria derived from public comment. The Army determined that there are sites, in addition to the Shepley's Hill site, within the former Fort Devens that are suitable for onsite consolidation of excavated debris. Because these sites are no longer owned by the Army, selection of an onsite consolidation location underwent a determination of the properties' availability. Of the available sites, it has been determined that the former Golf Course Driving Range best meets the "non-regulatory" criteria derived from public comment.

On April 1, 1998, the Army placed a notice in the Commerce Business Daily. The notice requested interested waste disposal contractors to submit a preliminary approach and cost estimate for disposing landfill debris at an offsite, commercial landfill using rail transport. The responses to the inquiry contained information with a level of detail comparable to that found in the CERCLA Feasibility Study Report that evaluated onsite consolidation. During a series of meetings with the USEPA, MADEP, the Devens Commerce Center, and community officials and residents, the Army presented responses received from the CBD inquiry. After careful review of contractor responses, the Army concluded that debris cleanup with offsite disposal would be significantly more costly than cleanup with an onsite consolidation landfill. However, waste disposal contractors indicated that their preliminary cost estimates for offsite debris disposal could be reduced, were the Army to solicit response to a formal Request for Bids.

Based upon concerns expressed during the public comment period, the Army re-evaluated its proposal for limited action at AOCs 11 and 41, and at SA 12. The community favored complete debris excavation at the three sites. Public concern ranged from the possible aquatic resource threat posed by contaminants at AOC 11, to possible ecological risk posed by contaminants at SA 12, to the effect debris at AOC 41 may have on potential water supplies in the Still River portion of the Town of Harvard. Potential impacts to human health and the environment posed by debris at the three sites have been re-considered by the Army. The Army has agreed to complete debris removal at AOC 11, and has concluded that surface debris, “hot spot” removal, and long-term monitoring will adequately address potential threats to the environment posed by debris at SA 12 and AOC 41.

The Army has prepared a Record of Decision. In the ROD, the Army is proposing to take no action at SA 6. Surface debris would be removed from SA 12 and from AOC 41. Debris at SA 13, and AOCs 9 11, and 40 would be dug up and either relocated to a new landfill constructed at the former Golf Course Driving Range, or disposed offsite at a commercial solid waste landfill. When filled, a new onsite landfill would be capped. The Army would select onsite or offsite disposal after evaluating formal bids from qualified waste disposal contractors. Bid evaluations will consider the following criteria:

- Overall protection of human health and the environment;
- Ability to satisfy health and safety concerns identified by area residents and public officials;
- Contractor's past performance; and
- Cost.

The Army's responses to comments received during the two public comment periods appear below. Responses are not presented for each individual comment received. Rather, each individual public comment has been grouped into a larger, similar comment, and a response has been prepared for each "larger" comment. This approach is consistent with USEPA guidance for preparing Responsiveness Summaries. All individual comments have been addressed within the responses below.

B. BACKGROUND ON COMMUNITY INVOLVEMENT

Community interest in landfill remediation at Devens dates back to 1994 when the Army began to discuss plans for remedial action with the Restoration Advisory Board. Since 1995, community concern and involvement have remained strong. Laurie Nehring, president of the People of Ayer Concerned about the Environment (PACE), has been particularly vocal in expressing concerns of the community to the Army, state and national political leaders, USEPA, and MADEP. PACE has been successful in focusing media attention on proposed Army actions at the seven debris disposal areas. Major concerns expressed during the first public comment period focused on the proposed site of the onsite consolidation landfill, and whether offsite debris disposal had been adequately evaluated. These concerns and how the Army addressed them are described below:

(1) PACE and several residents expressed concern that not enough time had been given for their review of the proposed actions.

Army Response: The public comment period was extended from 45 to 90 days, and a second public meeting was conducted.

(2) PACE expressed a great deal of concern about impacts to groundwater quality from a consolidation landfill constructed at the area near Shepley's Hill Landfill.

Army Response: The area near Shepley's Hill Landfill meets MADEP regulatory criteria for locating a landfill. The area is outside and cross-gradient from the Zone II protective boundary delineation for the Grove Pond public water supply wells. Although the site overlies a mapped potentially-productive aquifer, it is at the discharge portion of the aquifer rather than the recharge. Further, MADEP regulations do not prohibit landfills within areas overlying mapped aquifers.

Nevertheless, in response to public concern and using sentiments expressed in Proposed Plan comments as evaluation criteria, the Army conducted an expanded search for an appropriate consolidation landfill site.

(3) The Ayer Town Administrator and others asked the Army to further evaluate the feasibility of offsite debris disposal.

Army Response: Expressions of interest submittals were obtained from several waste disposal contractors. The submittals included technical approach and preliminary cost ranges to dispose debris offsite via rail transport.

(4) PACE and several residents asked for more detail on how potentially hazardous waste would be screened out of waste disposed onsite.

Army Response: At the second public meeting, a plan for segregating, analyzing, and disposing hazardous materials identified during the project was presented.

C. SUMMARY OF COMMENTS RECEIVED DURING THE PUBLIC COMMENT PERIOD AND ARMY RESPONSES

The first public comment period on the Landfill Remediation Feasibility Study Report and the associated Proposed Plan was held from December 8, 1997 through March 9, 1998. The second

public comment period was held from November 25, 1998 through January 11, 1999. Comments received during these periods are summarized in two sections, by comment period, below. Comments received in the second comment period identical to those in the first comment period are not repeated. Part I of each section addresses those community concerns that are non-technical in nature. Responses to specific legal and technical questions are provided in Part II. Comments are categorized by relevant topic.

C.1 Summary of comments received during the first Public Comment Period – December 8, 1997 through March 9, 1998

Part I – Summary and Response to Local Community Concerns

1. Remedial Alternative Preferences

(a) The Ayer Town Administrator presented cost estimates for offsite debris disposal that were lower than the cost of the Army's proposed plan to landfill the debris onsite. He asked if the Army had considered transporting the debris by rail to be disposed at an offsite commercial landfill.

Army Response: The Army presented an evaluation and cost estimate for offsite debris disposal in the 1995 Landfill Consolidation Feasibility Study Report. The evaluation concluded that costs for offsite disposal would be significantly higher than for an onsite landfill, while offering approximately equivalent protection of human health and the environment. The FS report evaluation assumed debris would be transport to an offsite landfill via trucks. In response to the Town Administrator's request, the Army agreed to evaluate offsite debris disposal using rail transport.

On April 1, 1998, the Army placed a notice in the Commerce Business Daily (CBD). The notice asked interested waste disposal contractors to submit their plan, including a cost range, to transport the debris by rail to an offsite disposal facility. Federal regulations prohibited the Army

from issuing a Request for Proposal. Instead, the announcement requested a non-binding expression of interest. The resulting responses to the inquiry contained information with a level of detail comparable to that found in the January 1997 CERCLA Feasibility Study report that evaluated onsite consolidation.

During a series of subsequent meetings with the USEPA, MADEP, the Devens Commerce Center, and the Ayer Town Administrator, the Army presented the responses received from the CBD inquiry. At the June 11, 1998 meeting of the Restoration Advisory Board, the Army presented to the public final evaluations of the written contractor responses. After careful review of contractor responses including follow-up telephone and personal interviews, the Army concluded that the total estimated cost for offsite debris disposal is $29.3 million, compared to $17.3 million for the proposed onsite consolidation landfill alternative. The Army cannot justify the current, significant additional estimated cost for offsite disposal. The Army will further evaluate offsite disposal costs relative to onsite costs in the Record of Decision. The ROD will allow the Army to evaluate actual bids for both disposal options. For more information, see the revised Proposed Plan.

(b) Some residents requested that debris at AOCs 11 and 41, and at SA 12 be removed and consolidated with debris from AOCs 9 and 40, and SA 13. There was concern that leaving debris in place would negatively impact regional water resources, i.e., the Nashua River and the nearby potentially productive aquifer.

Army Response: There is no evidence, based on the studies that have been conducted, that leaving debris in place at AOCs 11 and 41, and at SA 12 is negatively impacting regional water resources. It can be argued that contaminants detected in the Nashua River adjacent to AOC 11 and to SA 12 are from industrial activity upstream, and not from the debris disposal areas. The relevance of excavating debris from the additional three sites is discussed in more detail in the Army's response to comments in Part 11, Section 2 of this Responsiveness Summary. The Army has agreed to complete debris removal at AOC 11.

(c) One resident stated that debris from SA 6 should be removed during landfill remediation.

Army Response: SA 6 was used between 1850 and 1920 for disposal of household debris, mostly metal and glass. Because of its age and nature, the debris is not expected to pose risks to human health or to wildlife. A no action alternative at this site meets the criteria used to evaluate remedial alternatives.

2. Remedial Alternative Safety Concerns

(a) Some residents were concerned that consolidating debris in the new landfill would concentrate risks, not eliminate them.

Army Response: Debris disposed in the consolidation landfill would be concrete, metal, and wood mixed with soil. Potentially-hazardous waste, if any, would be removed from the debris before it is placed in the landfill. The landfill would be capped with impermeable materials. Debris that is currently uncontrolled would be safely isolated from the environment. The construction, maintenance, and monitoring of the consolidation landfill would minimize risks posed by demolition debris disposal.

(b) Some residents were concerned that oil-contaminated soil from other sites at Devens would be disposed in the consolidation landfill.

Army Response: The Army is planning to use soil containing allowable levels of contaminants as daily cover in the consolidation landfill. The soil has been generated from regulated soil excavations at other Devens sites. Soil contamination, similar to what is typically found in roadway pavement, would not exceed allowable levels set by MADEP for disposal of soil in a lined landfill. The proposed soil disposal method would not cause public health risks.

(c) Some residents were concerned that the proposed consolidation landfill would not contain a double liner or a leak detection system. For increased protection of the potential water supply in the aquifer below the landfill proposed for the area near Shepley's Hill Landfill, MADEP

recommended that a double composite liner be installed. This would allow monitoring of the primary liner. The inclusion of a double liner should be documented in the Proposed Plan and Record of Decision.

Army Response: A double landfill liner is not required by Massachusetts solid waste regulations; furthermore, no current plans exist to use the aquifer in the vicinity of Shepley's Hill for public water supply. The area near Shepley's Hill Landfill is no longer being considered by the Army as the primary site of the proposed consolidation landfill. Should onsite disposal be selected in the ROD, a single liner, meeting MADEP requirements, is planned for the consolidation landfill at the newly-proposed site.

(d) One resident was concerned about the life expectancy of the proposed consolidation landfill's geomembrane and the adhesive used to attach the sheets to one another.

Army Response: Life expectancy of a geomembrane in an unstressed condition is indefinite. When placed into a landfill environment, the effects of physical stress, temperature, and other factors play a role in geomembrane degradation. Geomembranes have been used in landfill construction for approximately 20 years. However, life expectancy can only be based on estimates. Considering literature review and discussions with technical experts, geomembrane used in the consolidation landfill is expected to be in service from 50 to 100 years.

The Army may use a geomembrane made from a material called polyethylene. Polyethylene sheets are fastened together using a heat-fused process that softens the edges of the material, then presses and bonds the sheets together without adhesive. Life expectancy of the seams is thus estimated to be 50 to 100 years, the same as the parent material.

(e) One resident was concerned that trapped gases would buildup inside the capped landfill.

Army Response: Most of the debris is not organic, so little waste decomposition and production of landfill gas is expected. Nevertheless, a series of gas vents will be built into the landfill cap. The vents will allow gas generated by decomposing landfill debris to escape.

(f) Some residents were concerned about the travel routes and schedules for truck traffic during debris and leachate hauling.

Army Response: For the most part, traffic will be confined to roads on Devens. An exception would be truck traffic that would use Walker Road and a portion of Front Street/West Main Street for travel between AOC 9 and the former Golf Course Driving Range during debris hauling.

The trucking schedule has not yet been decided; one will be determined by the Army during the design phase. To the extent possible, the trucking schedule will be designed to impose minimal impact on the community.

(g) One resident was concerned that the consolidation landfill would continue to be used for disposal by industries at Devens.

Army Response: The Army will build the landfill and fill it only once. Once the debris is placed into the consolidation landfill, it will be capped and closed. Additional waste disposal will not be allowed.

(h) One resident complained that the consolidation landfill site is not fenced, and is thus not secure. Potential vandals can easily gain access to the Shepley's Hill Landfill and the proposed site. The proposed consolidation site as well as the existing SHL should be enclosed with a fence.

Army Response: Instances of vandalism have not been evident during the site inspection program at the existing SHL. The SHL area is no longer being considered as the site for the consolidation landfill.

(i) Representatives from PACE, and other community members asked questions about the Army's plans to separate and dispose of potentially hazardous materials from the debris.

Army Response: Hazardous wastes are not expected to be found in the debris disposal areas, based on the current characterization of the debris. The Army's preliminary plan for characterization of excavated debris was presented at the February 25, 1998, public meeting. The plan goes beyond what has been conducted at other debris disposal sites at military facilities within the USEPA New England region.

Screening for potentially hazardous materials will be conducted using visual inspection, handheld monitoring equipment, collection and analysis of samples at an onsite laboratory, and offsite commercial laboratory analysis. A diagram illustrating the screening sequence is presented in Figure 10 of the Record of Decision. A more detailed sampling and analysis plan, including a description of proposed quality assurance measures, will be developed by the Army during the design phase. The plan will be made available for public review and comment.

Sampling of each truckload of debris will not be required. The proposed sampling lot size range (one sample for every 250 to 1,000 cubic yards of debris) is adequate when coupled with visual screening and debris monitoring using hand-held equipment. An offsite analysis confirmation rate of 10 percent is an industry standard used in many contaminated site cleanups.

After debris is excavated from a site, confirmation sampling (to be described in the sampling and analysis plan) will be conducted at the excavated area to confirm that no hazardous materials remain. The site will then be backfilled with clean soil, regraded, and re-vegetated. Because the site will be cleared of all contamination, no additional site monitoring is proposed.

Hazardous materials will not be disposed in the consolidation landfill, but would be hauled offsite to a permitted hazardous waste disposal facility.

(j) Members of PACE and the general public commented that the existing Shepley's Hill Landfill presents an environmental threat, and constructing the consolidation landfill next to it would exacerbate the current problems. Concerns expressed by the public include:

1) The existing landfill cap has not stopped generation of leachate, which is flowing into Plow Shop Pond and into the aquifer.

Army Response: The Army is conducting remedial activities at the existing landfill as prescribed in the Shepley's Hill Landfill Record of Decision. Cleanup actions at the site would be conducted separately from construction and operation of a consolidation landfill, were one to be located there. Currently, the proposed site for the consolidation landfill is not the area near Shepley's Hill Landfill.

2) Placement of the consolidation landfill adjacent to the existing landfill will affect potential future cleanup of Shepley's Hill Landfill.

Army Response: During final design of a consolidation landfill, the Army would evaluate the need for cleanup actions at Shepley's Hill Landfill. The design of a new landfill would take potential remedial actions into account and would be modified, if necessary, so it would not adversely impact pump and treat activities. Currently, the proposed site for the consolidation landfill is not the area near Shepley's Hill Landfill.

3) Groundwater contamination in the area is higher than what is acceptable.

Army Response: The Army will continue to evaluate and monitor the existing landfill under the ROD signed in September 1995.

(k) PACE stated that a waste pit may have existed at the site of the proposed consolidation landfill near Shepley's Hill Landfill. Historical aerial photographs indicate a dark rectangular area that may be a pit with liquid. PACE requested that further investigation be done to locate the possible waste pit. If located, it should be remediated in accordance with applicable regulations.

Army Response: The Army has no documentation that a waste lagoon, or pit, existed at the site. A black-colored rectangle can be seen on an aerial photograph taken in June 1976. Aerial photos taken in 1986 do not show the rectangle. In the ten-year interim, much disturbance of the land in the area, including operations at the Shepley's Hill Landfill, took place. Late 1980's regrading lowered the overall elevation of the area to the east of the existing Shepley's Hill Landfill. The Army believes the material observed in the 1976 photo has been removed, possibly to the Shepley's Hill Landfill. As part of consolidation landfill pre-design work, seven soil borings

were recently drilled into the proposed landfill area. No existence of a waste lagoon was evident from the borings.

3. Public Participation Process

(a) Comments were received that there was not enough time to evaluate the Proposed Plan; a request was made that the original 45-day comment period be extended.

Army Response: The Army agreed to extend the comment period by an additional 45 days, from January 22 to March 9, 1998.

(b) Ayer Selectwoman Pauline Hamel requested that a second public meeting be held to give the Army the opportunity to respond to questions from the public not answered at the January 8, 1998, meeting.

Army Response: The Army agreed to participate in a second public meeting on February 25, 1998. The purpose of the meeting was to respond to questions from the public not answered at the first public meeting, and to allow the public to submit additional comments on the Proposed Plan.

(c) A local citizen requested a third public meeting be held after the end of the public comment period.

Army Response: The Army respectfully declined, because it has already exceeded requirements for public involvement by: (1) extending the initial 45-day comment period by an additional 45 days, and (2) holding a second public meeting on February 25, 1998.

At the May 7, 1998 Restoration Advisory Board meeting, the Army presented results of its ongoing expanded site search for an appropriate consolidation landfill location. At the June 11, 1998 RAB meeting, the Army presented further updates on the landfill site evaluation, and discussed its ongoing evaluations of offsite disposal costs. The Army has since discussed landfill remediation at subsequent RAB meetings.

(d) A local citizen believed the Army had already made up its mind regarding the proposed alternative, and would not seriously consider public comment.

Army Response: The Army has seriously considered comments of the public. In addition to holding a second public meeting, the Army extended the initial public comment period from 30 to 45 days, and subsequently another 45 days, for a total of 90 days. In addition, the Army has vigorously pursued requests from the public to evaluate an offsite debris disposal alternative, and to expand the site search for an alternate onsite consolidation landfill location. Discussions of the additional evaluations appear elsewhere in the Responsiveness Summary.

4. Cost/Funding Issues

(a) A local citizen commented that it seemed wasteful to build, maintain, and monitor indefinitely a landfill that would contain, after separating out potentially-hazardous materials, only harmless materials like wood, concrete, and metal.

Army Response: The USEPA and MADEP have determined that each of the seven disposal areas constitutes a landfill and, as such, needs to be closed in accordance with applicable landfill regulations. At a minimum, closure must conform with the Massachusetts solid waste regulations. Closure options include no action or limited action (removal of surface debris), capping in-place, and complete debris removal. Because of the potential adverse impact on future use of the Devens wastewater treatment plant, on water quality in the Nashua River, and on the Patton water supply well, the Army proposes to remove all debris from AOCs 9, 11, and 40, respectively. Unrestricted re-use of the disposal area is the basis of the Army's decision to remove all of the debris at SA 13.

5. Decision Process

(a) Local citizens expressed concerns about the alternative selection process, such as who, besides the Base Closure Team, has a say in the selection, and who in the Army organization will ultimately make the decision.

Army Response: Private citizens, citizen action groups, and other parties, including the Devens Commerce Center, who are part of the surrounding community affected by the proposed actions, have a say in alternative selection through the public hearing and comment process. Raymond Fatz, Deputy Assistant Secretary of the Army for Environmental Safety and Occupational Health, has approving authority for this Record of Decision.

Part II – Comprehensive Response to Specific Legal and Technical Questions

1. Legal Applications

(a) Several residents believed that debris disposal at AOC 11 violates the Clean Water Act and the Massachusetts Wetlands Protection Act, which prohibit filling of wetlands.

Army Response: Within the context of the CERCLA process governing the landfill cleanup action, the Army evaluated implications of the Clean Water Act relative to AOC 11 disposal. The evaluation considered: (1) the nature and extent of disposed wastes, (2) wildlife habitat, (3) the surrounding environment, (4) potential human and ecological receptors, and (5) assessment of risk. The Army has concluded that the intent of the CERCLA process is to select a remedy that effectively addresses the risks presented at the site. The Army has agreed to complete debris removal at AOC 11.

2. Remedial Investigation/Feasibility Study Issues

(a) Several residents asked questions about the existing levels of contamination and associated health risks at the landfill sites.

Question: Is there public access to the existing information?

Army Response: Yes. The reports documenting the findings of the site investigations are available for review at the public libraries in Ayer, Harvard, Lancaster, and Shirley, and at the BRAC office at Devens.

Question: Can clear, concise summaries of contamination levels and associated health risks be provided to the public?

Army Response: The Army prepared and handed out contamination/risk summaries at the February 25, 1998, public meeting in Ayer. The summaries contain information from the various reports which document investigations at the landfill sites.

Question: How accurate are the laboratory testing results?

Army Response: Protocols for laboratory testing methods have been developed based on extensive research. The accuracy of the results is considered adequate for the intended use, which is to measure health risks at the landfills, and to make decisions regarding cleanup.

Question: Who did the laboratory testing?

Army Response: The analyses were performed by unbiased, certified testing laboratories contracted by the Army via competitive bidding process.

Question: What are the limitations of the risk evaluations?

Army Response: Uncertainties related to human and environmental risk are presented in the individual Site Investigation and Remedial Investigation reports, available for review in the public repositories. In general, limitations of the risk assessments are associated with: (1) whether the amount of contaminant at the site has been measured correctly, (2) proper selection of the length of time a person or animal would be exposed to a site contaminant, (3) how toxic the site contaminant is, and (4) assignment of risk caused by a mixture of chemicals at a site. To offset these uncertainties, conservative assumptions are used in the calculations of risk. For example, because only limited data exists on the interaction of multiple contaminants, risks are calculated assuming that the effects of contaminant exposure are additive. This likely results in an overestimation of risk.

(b) The Ayer Town Administrator stated that the proposed alternative doesn't meet all the CERCLA evaluation criteria, noting in particular that it is not receiving community acceptance.

Army Response: The proposed alternative is not required to meet all of the CERCLA evaluation criteria. Many alternatives chosen for implementation at Superfund sites across the country do not meet all of the criteria. Rather, the alternative that best represents an appropriate balance of the nine criteria is sought. CERCLA does require that the selected alternative, at a minimum, meet the Overall Protection of Human Health and the Environment, and Compliance with ARARs criteria. As the Army has documented in the Feasibility Study Report and the Proposed Plan, the proposed alternative is protective of human health and the environment, and complies with state and federal regulations. Community Acceptance is a modifying criteria; complete community acceptance is not mandatory.

(c) A comment was made that the Army provide a summary of the criteria used to select the Shepley's Hill Area as the proposed consolidation site, with a statement about the site relative to each criterion.

Army Response: The requested information is shown in Table C-1 at the end of this Responsiveness Summary. The Massachusetts DEP has accepted the Army's assessment that the Shepley's Hill Area meets the criteria for siting a solid waste landfill. The Army has further evaluated the area near Shepley's Hill Landfill using non-regulatory criteria, as described in the response to the next comment (Comment d). Currently, the proposed site for the consolidation landfill is not the area near Shepley's Hill Landfill.

(d) There were comments stating that the site selection process used for a soils treatment facility (STF) was not appropriate for locating the consolidation landfill. Commentors observed that the Shepley's Hill Area was ultimately not chosen as the site for an STF, due to its location in the default Zone II of the Grove Pond wellfield.

Army Response: While the site search for an STF was not tailored specifically for a landfill site, many of criteria for siting the two facilities are the same. Using selection criteria common to both facilities, STF site selection information was used to begin the process of siting the

consolidation landfill. Criteria specific to siting a landfill (for example, that it should be located no closer than 500 feet from the nearest residence), were included in the comprehensive site evaluations.

The Shepley's Hill Area was not chosen as the site for an STF. One of the reasons cited in the 1994 STF Siting Study Report was the area's location within the then default Zone II of the Devens Grove Pond water supply wells. The permanent Zone II delineation was accepted by the Massachusetts DEP in January 1995, at the time the site selection process for the consolidation landfill was being conducted. The Shepley's Hill Area, the site of the proposed consolidation landfill, was determined not to lie within the permanent Zone II. This information shed new light on the landfill site search, and the Shepley's Hill Area was re-considered as a candidate site.

The Army expanded the site search for an appropriate consolidation site. The expanded site search used non-regulatory criteria derived from the public comments on the December 1997 Proposed Plan. The former Golf Course Driving Range is currently proposed as the consolidation site.

(e) Some comments requested that the Army reconsider SA 15, the Building 202 Area, and the North Post Landfill for siting the consolidation landfill. The citizen action group People of Ayer Concerned about the Environment (PACE) listed alternate sites it could support, and asked the Army to consider them; they include: (1) the South Post, particularly areas along Route 2, (2) the Federal Bureau of Prisons medical facility, (3) underneath parking lots to be built in conjunction with the Devens reuse plan, (4) the median and cloverleaves of Route 2, and (5) areas on the Main Post that are not located over an identified aquifer.

Army Response: The Army has evaluated the sites suggested in the comment. Evaluations were based on the regulatory criteria presented in Table C-1 of this Responsiveness Summary. The Army had initially concluded that of all the sites considered, the Shepley's Hill Area represented the best balance of compliance with the criteria. A more recent, expanded landfill site search using non-regulatory criteria modified the initial conclusion. The Army is currently proposing the former Golf Course Driving Range as the proposed consolidation landfill site. Reasons for not selecting the sites suggested in the comment are as follows:

- Location of a landfill at SA 15 conflicts with the South Post's designation as an Area of Critical Environmental Concern. Landfills are specifically prohibited from such areas.

- Under the Devens Reuse Plan, the Building 202 Area is designated for Rail, Industrial, and Trade-related use. The site is also located in area mapped as a potentially-productive aquifer.

- The Base Closure Team concluded that the North Post Landfill Area was not an appropriate location because of its proximity to populated areas, adverse community impacts that would result during debris hauling and landfill construction, and potentially significant and costly site preparation requirements. MADEP landfill siting criteria prohibit landfills within 500 feet from a prison. Thus, the Federal Bureau of Prisons site cannot be considered for the consolidation landfill.
- Placing landfill debris under parking lots, highway medians, and cloverleaves cannot be considered. To allow rainwater to easily drain from the cap, landfills need a final grade sloped steeper than what is considered appropriate for parking lots. Extremely deep excavation would need to occur to create the "hole" in which to place the wastes, and the resulting leachate collection system would need to rely on costly mechanical removal, as opposed to a conventional gravity system. These are a few of the foreseeable problems associated with the suggested areas.

(f) A comment suggested the Army selected the Shepley's Hill Area because a large landfill (Shepley's Hill Landfill) already exists there, and "a little more waste won't matter."

Army Response: The Army initially chose the Shepley's Hill Area as the site for the consolidation landfill because, of all the sites considered, it represented the best balance of compliance with the regulatory criteria. The existence of the adjacent Shepley's Hill Landfill offered additional advantages: (1) monitoring and maintenance of the proposed landfill could be efficiently carried out in conjunction with the larger, existing landfill, and (2) the proposed site lies within a MADEP-approved Landfill Expansion Area. Currently, the proposed site for the consolidation landfill is not the area near Shepley's Hill Landfill.

(g) Specific technical objections to the proposed consolidation landfill location near Shepley's Hill Landfill were received from PACE, community leaders, and local residents.

Army Response: Responses to the individual technical objections are as follows:

(g)(1): The site overlies an aquifer, and is near the Zone II delineation for the Devens Grove Pond and the Town of Ayer municipal water supply wells.

Army Response: The formerly-proposed consolidation site lies over an area mapped by the USGS as a "Potentially Productive Aquifer", based upon favorable soil conditions. A potentially productive aquifer is a sand and gravel formation storing groundwater that could potentially supply moderate-to-high amounts of water to extraction wells placed in the ground. More importantly, the proposed site is not located within the Zone II delineation for the Devens Grove Pond and the Town of Ayer municipal water supply wells. The Zone II boundaries, approved by MADEP, are those portions of the aquifer that contribute water to the wells. Water to the wells is drawn only from the Zone II area, even if the wells are pumped at their maximum extraction rate. The remaining aquifer, including the area of the proposed consolidation, does not contribute water to the wells. MADEP prohibits landfills from being sited within Zone II boundaries. There are no state regulations prohibiting landfills from an area overlying a potentially productive aquifer.

(g)(2): There is no guarantee that groundwater flow direction will continue to be away from drinking water wells should a 100-year flood occur. The site may lie within a 100-year floodplain.

Army Response: Groundwater flow direction is determined by conditions that exist below the ground surface. Subsurface conditions which influence groundwater flow direction include how fast groundwater can pass through soil, and whether there exists obstructions to groundwater flow such as bedrock or clay formations. At the Shepley's Hill area, severely increased infiltration to the subsurface during extended periods of heavy rain (as may occur during a 100-year storm) may cause temporary changes in groundwater flow direction. However, normal flow patterns would resume soon after the rain subsided and subsurface infiltration ceased. The Army

has reviewed Flood Insurance Rate Maps prepared by the Federal Emergency Management Agency. These maps indicate that the site of a potential landfill near the Shepley's Hill Landfill does not lie within the 100-year floodplain. Currently, the proposed site for the consolidation landfill is not the area near Shepley's Hill Landfill.

(g)(3): Landfills leak. The Army's groundwater modeling report indicates that water from beneath the site of the proposed landfill appears to flow into Grove Pond, thereby creating a potential contamination source. Leaking leachate would pass through subsurface soil to the pond. Water from Grove Pond is pulled through pond sediment and captured in the Ayer municipal and Devens water supply well.

Army Response: The consolidation landfill is designed to prevent leaking. The consolidation landfill cap will be sloped to shed rainwater, and will contain a continuous plastic sheet (geomembrane) to prevent rainwater from seeping through. The landfill bottom will be lined with geomembrane overlying compacted clay soil for added leak protection. A series of pipes installed over the liner will collect water that may infiltrate the landfill (leachate). Leachate would be routed to a holding tank, and periodically removed to a wastewater disposal facility for treatment.

The Army's March 1996 *Revised Groundwater Model for the Shepley's Hill Landfill Area* describes groundwater flow direction in the vicinity of the proposed consolidation landfill. The model uses measurements taken in the groundwater below the existing landfill, near Plow Shop Pond and Grove Pond, and in the area of the proposed landfill. Considering this data, the model defines groundwater flow direction to be from the proposed landfill area to Plow Shop Pond. There is no evidence in the model results of groundwater flow toward Grove Pond. Nor is there evidence that groundwater would move from the proposed landfill site to the Zone II of the Ayer municipal and Devens water supply well. Currently, the proposed site for the consolidation landfill is not the area near Shepley's Hill Landfill.

(g)(4): The consolidation landfill location will obstruct planned remediation at Plow Shop Pond and Grove Ponds; the planned pond cleanup will be hampered by the landfill's addition of contaminants to the area.

Army Response: The Army acknowledges that Plow Shop Pond contarnination is being studied relative to its impact on the environment. However, no plans for Plow Shop Pond cleanup have been formulated at this time. Likewise, the Army is not aware of plans for Grove Pond remediation. Currently, the proposed site for the consolidation landfill is not the area near Shepley's Hill Landfill.

(g)(5): Shepley's Hill Landfill may have archeological significance, as does Study Area 6 on the South Post. As such, it may not be prudent to disturb the general area with a new landfill.

Army Response: Solid waste disposal began at Shepley's Hill Landfill as early as 1917, and glass fragments identified in the northwest portion of the landfill dated to the mid-nineteenth century. There have been no studies performed to determine if the existing landfill has archeological significance. Currently, the proposed site for the consolidation landfill is not the area near Shepley's Hill Landfill.

(g)(6): A local resident expressed concern about the impact of landfill construction and operation on the local populated area, including the Parker Charter School.

Army Response: Noise, traffic, and dust are potential nuisances that may impact surrounding residents during landfill remediation. The Army would work with the Town of Ayer to minimize these impacts, including routing truck traffic away from schools and populated areas, restricting work hours where possible, and implementing dust control measures.

(g)(7): The Army should consider other locations for the consolidation landfill, or consider offsite disposal. The proposed site near Shepley's Hill Landfill is too close (less than a half-mile) from residential areas; the landfill's visual impact will lower property values. If it's as safe as the Army says it is, a landfill in the South Post would not impact the Army mission; putting the landfill at the Devens golf course makes sense because maintaining a recreation area is not as important as protecting Ayer's water supply; the landfill should be located in a remote area, far away from the towns surrounding Devens, and their water. Many residents of Ayer do not want the landfill to be located near Shepley's Hill. The public's environmental concerns about locating a landfill onsite should outweigh any CERCLA bias toward offsite waste disposal.

Army Response: The area near Shepley's Hill Landfill meets solid waste landfill siting criteria established by MADEP, including distance to the nearest residence. A potential consolidation landfill would be no higher than the adjacent existing landfill, and would have a grass cover. It would therefore not be considered to have significant detrimental visual impact. However, in response to public sentiment against siting the landfill at the Shepley's Hill area, the Army has conducted a search for an alternate consolidation site. Land area within the boundary of the former Fort Devens, including the South Post and the former Main and North Posts, was reconsidered. Non-regulatory criteria derived from public comments on the December 1997 Proposed Plan, and construction-ease criteria, was used. The former Golf Course Driving Range is currently the site being proposed for the consolidation landfill.

(h) PACE's technical consultant commented on the Army's contingency plans for extracting and treating groundwater at Shepley's Hill Landfill. The consultant speculated that the Army abandoned plans for a second groundwater extraction well because of its proposed location at the consolidation landfill site. The consultant concluded that the landfill should not be built in the proposed location because it interferes with the contingency plan for groundwater.

Army Response: If monitoring at Shepley's Hill were to indicate that treatment of groundwater is needed, the Army had considered an extraction well at the north end of SHL, and a second well in the area of the consolidation landfill. Recent evaluation of groundwater monitoring data shows that improving groundwater quality precludes need for the second well. Although the planned location of the second well conflicts with a potential consolidation landfill, a modified well location outside the landfill could be identified. Currently, the proposed site for the consolidation landfill is not the area near Shepley's Hill Landfill.

(i) A resident commented that the Army should include the cost of future replacement of landfill construction materials in its Feasibility Study cost estimate. He stated this procedure had been followed during the Superfund cleanup process at another landfill in Massachusetts.

Army Response: The costing procedure cited in the comment is unique to the privately-owned landfill where it was conducted. It was required for planning purposes to give added assurance that adequate moneys would be available for future landfill monitoring and maintenance.

USEPA's Superfund guidance does not require that material replacement costs be determined. Financial assurance for maintaining the consolidation landfill is provided by the federal government.

(j) A resident was concerned about the ability of site soil to support the weight of the consolidation landfill.

Army Response: An evaluation of the site soil's capability to support a consolidation landfill in the area near Shepley's Hill Landfill was performed. The assessment used information from soil borings taken at the proposed site. The Army has concluded that the soils can adequately support the weight of the proposed landfill. The soils evaluation is included as an appendix to the Feasibility Study report. Currently, the proposed site for the consolidation landfill is not the area near Shepley's Hill Landfill.

(g) A resident was concerned that a detailed diagram of the consolidation landfill cell was not available.

Army Response: Conceptual landfill design diagrams are presented in the Feasibility Study report. Construction drawings showing more detail are being prepared by the Army and will be available for public review during the project's design phase.

(k) One resident suggested the Army consider composting, recycling, and (waste-to-energy) incineration of excavated debris. These disposal methods should be implemented, where possible, instead of landfilling.

Army Response: For feasibility study purposes, landfilling alone was assumed. During the project bidding process, the Army will request that contractors present alternate, innovative methods for disposal. The Army will consider alternate, cost-effective disposal methods that divert debris from the consolidation landfill.

(m) A resident was concerned that the Nashua River would be contaminated during waste disturbance when SA 12 debris is being excavated.

Army Response: During surface debris excavation at SA 12 and at other sites, the contractor will be required to set up barriers to control runoff of soil and waste from the site. The barriers may include hay bales, or possibly a temporary fence made of fabric that allows water to pass through, but holds back soil and solid objects, which are cleaned out periodically. The contractor will be prohibited from causing soil and debris to enter the river.

(n) One resident stated that she would prefer to see AOC 40 excavated first, because of potential impacts to the Patton water supply well.

Army Response: Excavation sequence will be chosen to optimize efficiency and encourage quick completion of the project. It is possible that debris will be excavated from each of the landfills at the same time. More will be known during the project bidding phase.

(o) The U.S. Fish and Wildlife Service stated that AOC 11 debris should be removed in its entirety because it has elevated concentrations of DDT in surface soil. The USFWS stated that DDT has a well-documented history of threatening wildlife resources.

Army Response: The Army acknowledges that DDT was detected in AOC 11 environmental media and recognizes that this and other pesticides can pose a bioaccumulation hazard to ecological resources. However, a review of analytical results from the AOC 11 Remedial Investigation Report indicates that this compound was detected at concentrations that are generally consistent with Devens background. The Army believes that the presence of DDT is most likely related to historical spraying activities following prescribed application procedures throughout the Nashua River watershed. There is no evidence to suggest that the DDT detected in AOC 11 environmental media is attributable to a defined source associated with the site or that the removal of debris would have any beneficial effect of decreasing offsite wildlife exposure to DDT in the future.

A brief summary of the nature and extent of the DDT detections in environmental media sampled as part of the RI, and the ecological risk implications for wildlife receptors is provided in Attachment 1 to substantiate these conclusions.

The Army has agreed to complete debris removal at AOC 11.

(p) The USFWS stated that AOC 11 should be removed in its entirety because it is a threat to aquatic resources of the Nashua River.

Army Response: The AOC 11 RI report evaluated risk to aquatic resources in the Nashua River by comparing surface water and sediment analytical results to conservative screening benchmarks and by conducting laboratory toxicity tests using bulk sediment, surface water, and sediment elutriates. The incremental risks potentially attributable to AOC 11 were estimated using analytical results collected at reference areas. These results are briefly summarized in Attachment 2. Although the benchmark comparison and toxicity test results suggest that aquatic resources in the Nashua River are at risk, the potential incremental effects attributable to AOC 11 appear to be insignificant. The Army believes that the proposed actions (e.g., surface debris removal, debris slope stabilization, surface soil hot spot removal) at AOC 11 will eliminate further off-site migration and that complete debris removal would have little to no effect on risk reduction in the Nashua River and is consequently unwarranted. However, due to significant public comments, the Army has agreed to complete debris removal at AOC 11.

(q) PACE requested that additional studies be done at AOC 11 to determine if complete removal of debris is warranted. PACE requested that additional study of the contribution of AOC 11 to ecological risks in nearby wetlands be carried out to determine if complete removal of debris would reduce such risks significantly.

Army Response: The Army believes that a thorough evaluation of potential ecological impacts associated with the AOC 11 debris disposal area has been conducted and that the available information is sufficient to select appropriate remedial actions for the site. As concluded in the AOC 11 RI Report, contaminant input from the site to the river is not readily discernible from the background conditions in upstream sections of the river. It is therefore unclear whether contaminants present in wetlands at AOC 11 are attribuable to landfill debris or from Nashua River deposits during high water events. Several of the primary risk contributors detected in river sediment (e.g., various pesticides, Aroclor 1260, bis(2-ethylhexyl)phthalate, are likely not associated with the debris disposal area.

Complete migration pathways between debris disposal area soils and groundwater and northern and southern wetland sediments were identified in the RI. However, these wetlands appear to be functioning effectively to minimize further migration, because contaminant concentrations decrease substantially with distance from the disposal area edge.

Due to significant public comments, the Army has agreed to complete debris removal at AOC 11.

(r) The USFWS and others requested that more testing be done to determine if complete debris removal at SA 12 and AOC 41 is warranted, because of their location within an Area of Critical Environmental Concern, and because the sites are potential sources of ecological risk.

Army Response: The Army disagrees that the SA 12 and AOC 41 landfills represent a significant source of ecological risk or that contaminant migration from these two areas results in an incremental increase in contaminant concentrations in downgradient wetlands or water bodies. Existing information (provided in Attachment 3) suggests that full removal of either of these landfills is not warranted in order to protect ecological resources in the vicinity. Removal of surface debris and hot-spot soil is proposed.

(s) The USFWS and others stated that AOC 41 should be removed because: (1) it borders an ecologically-sensitive area, namely, New Cranberry Pond, (2) the debris includes oils, batteries, transformers, and pesticides, (3) there are VOCs and metals in groundwater, and groundwater flows from AOC 41 to the Nashua River, and (4) debris at AOC 41 has an effect on potential water supplies in the Still River area of the Town of Harvard.

Army Response: (1) Although New Cranberry Pond is topographically downgradient from the debris disposal area, there does not appear to be a complete pathway for contaminant travel (i.e., for either surface water runoff or leaching to groundwater). This observation is made based on a review of the information presented in the SI, SSI, and RI reports for AOC 41. Removal of surface debris and hot-spot soil is proposed.

(2) Subsurface investigations at the site determined the debris to be comprised of beverage cans, glass bottles, rusted car parts, and charred wood. There has been no documentation of oil, battery, or transformer disposal at AOC 41. Although pesticide residue has been detected in samples collected from the site, there is no documentation of pesticide disposal at AOC 41.

The AOC 41 preliminary risk evaluation concluded that although concentrations of certain site contaminants exceeded their respective residential screening values, the site is presently accessed only by occasional visitors and military personnel, and groundwater is not used. Therefore, evaluations of soil, groundwater, surface water, and sediment using residential screening values represent very unlikely indications of potential human health risks.

The incremental risks associated with ecological exposures to disposal area surface soils are not considered significant based on the magnitude of the risk estimates and the conservative approach used to estimate those risks. Debris area contaminants do not appear to have migrated to New Cranberry Pond. Debris area contaminants have not affected groundwater quality such that a potential risk to aquatic receptors would be posed following eventual discharge to the Nashua River.

(3) The VOC and inorganic analytes detected in AOC 41 groundwater pose no threat to aquatic receptors in Nashua River. A comparison of the VOC and inorganic results for those analytes that were detected in AOC 41 groundwater at concentrations above Devens background levels indicates that with the exception of a single detection of zinc (130 mg/l in 41M-94-09A collected on 6 December 1994), maximum concentrations of all detected analytes in filtered groundwater samples are below available freshwater chronic Ambient Water Quality Criteria. With the exception of the maximum zinc concentration, all other concentrations detected in filtered groundwater are less than the chronic AWQC (110 mg/l). The AOC 41 RI Report states that the maximum concentrations of all VOC analytes are more than an order of magnitude less than the surface water benchmarks. Actual exposure concentrations in the Nashua River would likely be substantially less due to attenuation (the Nashua River is approximately 2,000 feet from AOC 41) and dilution processes following groundwater discharge.
(4) The Still River area of Harvard is approximately four-fifths of a mile east/southeast from AOC 41, and is separated from the site by the Nashua River. Based on results of the Army's

investigations, groundwater flow from AOC 41 travels northeast and east to the Nashua River, approximately 2,000 feet away. The Nashua River, in turn, flows due north. The river acts as a hydraulic barrier between AOC 41 and groundwater that might potentially be tapped for water supply for the Still River area. Thus, groundwater originating at AOC 41 would be "blocked" by the Nashua River before it could reach the Still River area of Harvard.

The Remedial Investigation Report concluded that the debris at AOC 41 is not the source of groundwater contamination. Subsequent Army investigations were unable to pinpoint the exact source of groundwater contamination. The South Post Impact Area Record of Decision calls for continued long-term sampling and analysis of groundwater at the site.

TABLE C-1
SHEPLEY'S HILL AREA COMPLIANCE WITH LANDFILL SITE CRITERIA

DEP FACILITY-SPECIFIC CRITERIA	MEETS CRITERIA	DOES NOT MEET CRITERIA
Cannot be within Zone II of existing public water supply well	X	
Cannot be within an Interim Wellhead Protection Area	X	
Cannot be within 15,000 feet upgradient of a well for which Zone II has not been calculated	X	
Cannot be within Zone II of potential public groundwater supply	X	
Cannot be in an area where leachate release would endanger a potential public groundwater supply for which Zone II has not been determined	X	
Cannot be over a recharge area of a Sole Source Aquifer (some exceptions)	X	
Cannot be less than one-half mile upgraded of a surface drinking water supply	X	
Cannot be less than 250 feet upgradient of a perennial watercourse draining to a surface drinking water supply within one mile of the landfill	X	
Cannot be less than 500 feet downgradient of a surface drinking water supply	X	
Cannot be less than 500 feet of a private drinking water supply well unless restricted area and well are purchased	X	
Must be able to attain four feet from the maximum high groundwater table or within four feet of the lower-most liner	X	
Cannot be within area protected by Wetlands Protection Act (including 100-year floodplain)	X	
Cannot be less than 250 feet from a lake or river other than a drinking water supply	X	
Cannot be less than 500 feet from an occupied residential dwelling, health care facility, prison, lower education institution, or pre-school	X	
Cannot be located where leachate would result in an adverse impact to groundwater, unless a groundwater protection system is incorporated	X	
Cannot be less than 100 feet from active farmland	X	
Cannot be in an area where traffic impacts would endanger public, health, safety, or the environment	X	
No adverse impact on wildlife habitat	X	
Cannot be in an Area of Critical Environmental Concern (ACEC)	X	
Cannot be anticipated air emissions from the facility must meet federal and state air quality standards and not endanger public health, safety, or the environment	X	

TABLE C-1
SHEPLEY'S HILL AREA COMPLIANCE WITH LANDFILL SITE CRITERIA

DEP FACILITY-SPECIFIC CRITERIA	MEETS CRITERIA	DOES NOT MEET CRITERIA
Will not create nuisance conditions endangering public health, safety, or the environment with regard to: noise, litter, rodents/insect, odors, bird hazards to air traffic	X	
Must be of sufficient size to properly operate and maintain	X	

DEP GENERAL CRITERIA	SHEPLEY'S HILL AREA
Where an area adjacent to the site of a proposed facility has been previously used for solid waste disposal:	
• does prior solid waste activities on the adjacent site adversely impact proposed site	No
• what is impact of proposed site on site previously used for solid waste disposal	No significant impact expected
• what are combined impacts of the proposed site and previously used adjacent site on public health, safety, and the environment relative to:	
1) whether proposed site is an expansion of or constitutes beneficial integration of the solid waste activities with the adjacent site	Closed, consolidated landfill would be maintained and monitored.
2) whether proposed site is related to the closure and/or remedial activities at the adjacent site	Closed, consolidated landfill would be maintained and monitored.
3) extent to which design and operation of proposed site will mitigate existing or potential impacts from adjacent site	Impermeable cap would prevent infiltration of precipitation to waste.

OTHER FACTORS CONSIDERED RELATIVE TO THE SHELPEY'S HILL AREA SITE

- Monitoring and maintenance of the proposed landfill can be efficiently carried out in conjunction with the larger, existing landfill.
- Devens redevelopment will not be impacted.
- The site requires minimal site preparation / open, flat area.
- Easy access.
- Utilities available nearby.
- Site lies within approved Landfill Expansion Area.

C.2 Summary Of Comments Received During The Second Public Comment Period November 25, 1998 Through January 11, 1999

PART I – SUMMARY AND RESPONSE TO LOCAL COMMUNITY CONCERNS

1. Remedial Alternative Preferences

(a) The U.S. Department of the Interior, Fish and Wildlife Service, commends the Army for the decision to include total debris removal at AOC 11 in the proposed cleanup plan.

Army Response: The Army looks forward to coordinating debris removal actions with the FWS.

(b) The Massachusetts Audubon Society endorses the Army's plan to excavate debris at SA 13, and AOCs 9, 11, and 40.

Army Response: The Army looks forward to presenting more details on the preferred alternatives during the design phase.

(c) The U.S. Department of the Interior, Fish and Wildlife Service, continues to endorse total debris removal at SA 12 and AOC 41; future long-term monitoring will be critical to ongoing evaluation of the two sites.

Army Response: The Army looks forward to coordinating the design, implementation, and review of long-term monitoring programs with the FWS.

2. Decision Process

(a) The Town of Ayer, the People of Ayer Concerned about the Environment (PACE), State Senator Robert Durand, MassDevelopment, the Nashua River Watershed Association, and several area residents support the Army's Proposed Plan. The commentors are particularly

pleased that the Army intends to perform total debris removal at AOC 11, and that offsite debris disposal is to be seriously considered. The commentors (as well as Freedom's Way Heritage Association) indicate a preference for offsite debris disposal. The Town of Ayer, PACE, Senator Durand, and MassDevelopment wish to actively participate in determining the Army's definition of "best value", the criterion to be used to evaluate contractor bids for onsite and offsite debris disposal.

Army Response: The Army looks forward to community participation, to the degree allowable within the constraints of federal acquisition laws, during the bidding process.

(b) A Lunenburg resident asked if the Army's preferred alternative is approved by MADEP and the USEPA.

Army Response: Both the MADEP and the USEPA have indicated concurrence with the Army's preferred alternative.

PART II – COMPREHENSIVE RESPONSE TO SPECIFIC LEGAL AND TECHNICAL QUESTIONS

1. Legal Applications

(a) Lunenburg resident asked if the Army will indemnify area homeowners should the propose remedy fail to meet its objectives.

Army Response: The Army is responsible indefinitely for environmental problems caused by landfill debris being addressed in the preferred alternative.

- Remedial Investigation / Feasibility Study Issues

(a) The Citizens to Protect Residential Harvard, and some individual Harvard residents endorse the offsite debris disposal option. They were concerned that a landfill constructed at the former Golf Course Drive would leak contaminated water or landfill gases, threatening groundwater quality and area residents. They also questioned who would have long-term responsibility for operation of the landfill.

Army Response:A consolidation landfill would be designed to prevent leaking. The landfill cap would be sloped to shed rainwater, and would contain a continuous plastic sheet (geomembrane) to prevent rainwater from seeping through. The landfill bottom would be lined with geomembrane overlying compacted clay soil for added leak protection. A series of pipes installed over the liner would collect water that may infiltrate the landfill (leachate). Leachate would flow to a holding tank, and periodically removed to a wastewater disposal facility for treatment.

In compliance with state solid waste regulations, the selected site provides adequate setbacks from area residents, drinking water supplies, and surface water bodies. The Army will perform a thorough hydrogeological study of the former Driving Range site prior to constructing a landfill. The study will identify types of soil and bedrock in the area, and establish groundwater quality as it currently exists at the site. Continuous monitoring of groundwater quality during landfill operation will indicate if landfill is failing to completely contain the debris.

Because the debris is mostly inert building construction materials, landfill gas is not considered at this time to be of concern. If, during debris excavation, waste containing materials considered to be gas-producing are encountered, the Army will include proper controls in the landfill's design to prevent gas migration.

The Army has agreed to include members of the community in its assessment of whether to consolidate debris in a new landfill, or dispose of the material offsite. Should the onsite disposal option be chosen, the Army would assume responsibility for the landfill and its operation for as long as the facility exists.

(b) A resident asked why estimated costs stated in the Proposed Plan for Alternatives 4c and 9 are approximately equal. Alternative 9 proposes to relocate debris from seven disposal areas.

Army Response: The correct estimate for Alternative 9 is $21.1 million. The estimate was adjusted from the estimated in the FS Report ($20.2 million) to more accurately reflect costs to excavate debris at AOC 11.

(c).A resident asked if it would make sense for the Army to use money intended for long-term monitoring at SA12 and AOC 41 toward debris removal at those sites.

Army Response: Funds to perform long-term monitoring at SA 12 and AOC 41 will not be obtained from the source that will fund the preferred alternative. Long-term monitoring costs for SA 12 will be incurred by MADEP, while monitoring costs at AOC 41 are being incurred in conjunction with the groundwater operable unit for that site.

(d) The Town of Harvard Board of Selectmen endorses total debris removal at AOC 11, concurs with the decision not to site a consolidation landfill adjacent to Shepley's Hill Landfill, and strongly endorses the offsite debris disposal option. The Board has the following concerns regarding selection of the former Golf Course Driving Range (GCDR) for the onsite consolidation option:

Concern: Using the operation of Shepley's Hill Landfill as a basis, another landfill built and operated by the Army will be problematic.

Army Response: Unlike Shepley's Hill Landfill, debris at the proposed consolidation landfill will be isolated from the environment. In addition to a cap, the proposed landfill will contain a bottom liner and a leachate collection system. Its construction will adhere to the latest applicable solid waste guidelines.

Concern: The Town of Harvard's ability to locate a new well in the area of the GCDR will be compromised.

Army Response: The Town would need to locate a new water supply well such that the GCDR is excluded from the well's delineated Zone II protection area

Concern: The Army's gross ReUse Plan mapping may not accurately depict the Zone II boundary of the Patton Well, shown quite close to the GCDR.

Army Response: The Zone II boundaries for the Patton well have been accepted by MADEP. The landfill remediation design will verify that proper setbacks, in accordance with regulatory restrictions, are satisfied.

Concern: The Board questions, and requests further explanation (as does Freedom's Way Heritage Association) the basis of the estimated costs for onsite and offsite disposal.

Army Response: The Army presented a detailed explanation of its cost estimates at the June 1998 RAB meeting.

Concern: The Board requests an opportunity to participate in reviewing and evaluating design criteria for and responses to Requests for Proposals for onsite and offsite debris disposal alternatives.

Army Response: The Army will present information on the landfill design to the public as it becomes available. The Army looks forward to community participation, to the degree allowable within the constraints of federal acquisition laws, during the bidding process.

Concern: U. S. Senator Judd Gregg (NH), U. S. Representative John Sununu (NH), and Philip O'Brien, Director, New Hampshire Department of Environmental Services (NHDES), is concerned about the Army's plan for offsite disposal. Based on a similar multiple-landfill closure project at Pease AFB, the cost of onsite consolidation at Devens should be much less expensive than for offsite disposal. NHDES is concerned about impacts to existing landfill capacity in New Hampshire, should debris from Devens be brought there for disposal.

Army Response: The Army agrees that onsite consolidation appears to be the least expensive disposal option at Devens, and that it needs to assess contractor bids for conformance to four evaluation criteria, including cost.

(e) A local resident asked the Army to clarify what is meant by surface debris removal, as proposed for SA 12 and AOC 41.

Army Response: Man-made objects lying on or protruding from the ground surface will be removed. If the object protrudes into the ground, it will be removed in its entirety, if it is reasonable to do so. Otherwise, it will be severed, if possible, a couple of feet below ground surface.

(f) A local resident mentioned that contaminant levels at SA 12 and AOC 41 exceed ecological benchmark values. Will protection of the environment be provided by the proposed alternative?

Army Response: Surface debris and hot spot soil removal at the two sites will remove those contaminants causing exceedances of ecological benchmark values.

(g) A Harvard resident asked several questions about contamination levels at the debris disposal areas:

Question: Is there evidence that the landfills have affected groundwater quality in the past?

Army Response: At the disposal areas where groundwater samples were analyzed, relatively low levels of contaminants were detected. There has been no adverse impact to drinking water supplies from landfill debris.

Question: What is the criteria used to determine that a particular site presents "acceptable human risks"? What is acceptable? At what point do the risks become unacceptable?

Army Response: Acceptable risks are defined using USEPA criteria, and vary from site to site, depending on types and amounts of contaminants, and type of land use. Acceptable risks meet the standards defined for a particular site. For more information, please refer to the Preliminary Risk Evaluations and Risk Assessments presented in the Army's site-specific site investigation reports.

Question: What specifically are the " contaminants" mentioned in several places in the Plan, such as on page 3: "chlorinated solvents and metals"?

Army Response: Specific contaminants vary depending on the debris disposal site. The information is contained in the Army's site-specific site investigation reports.

Question: Do any of the contaminants have a history of causing disease? If so, what specific diseases?

Army Response: Some of the contaminants observed at the disposal areas have a history of causing disease. However, the relatively low levels of contaminants, and lack of exposure pathways preclude the sites as serious health threats.

Question: The Plan makes reference to the Nashua River likely being " a significant contributor to floodplain sediment contamination". What are the studies that serve as the basis for this statement or studies referenced that I may access?

Army Response: The capability of the Nashua River to contribute to floodplain sediment contamination is addressed in detail in Part C.1 of this Responsiveness Summary.

C.3 Public Meeting Transcripts

ATTACHMENT 1
To Appendix C-1

Attachment 1

SURFACE/SUBSURFACE SOIL: 4,4'-DDT was detected in 15 of 16 surface soils collected as part of the RI (ADL, 1995) at concentrations that ranged from 0.012 to 8.0 µg/g. With the single exception of the maximum concentration (detected at 11B-94-02X), detected results were below the Devens background concentration (5.6 µg/g). Although DDT was also detected in all subsurface soil samples collected from the 10 test pit excavations within the refuse area, concentrations were below background (ADL, 1995).

Ecological exposure to DDT in debris area surface soils is predicted to result in only minimal risk to sensitive wildlife receptors. The Hazard Quotients (HQs) based on exposure to average and maximum exposure point concentrations are 1 and 7, respectively (HQ = 5 at Devens background). Due to the conservative nature of the ecological benchmark employed to screen risk (ADL, 1995), these results suggest that wildlife receptors are unlikely to be affected by exposure to DDT in debris area surface soils.

WETLAND SEDIMENT: 4,4'-DDT was detected in 4 of 10 sediment samples collected from the northern and southern wetlands adjacent to the debris disposal area. Only the maximum concentration (0.299 µg/g at 11D-94-07X in the southern wetland) exceeded the concentration in the upstream wetland sample (0. 194 µg/g at DXD 1110). As is the case with soils, these results suggest that the presence of DDT in wetland sediment is consistent with general conditions within the Nashua River watershed and does not support the contention that a DDT source associated with AOC 11 has adversely affected wetland sediment quality.

RIVER SEDIMENT: 4,4'-DDT was detected in 4 of 5 sediment samples collected adjacent to AOC 11 (maximum concentration of 0.222 µg/g at NRD-93-20X) but was not detected in the upstream reference location. However, a single sampling location should be considered inadequate to characterize upgradient conditions in the Nashua River, given the considerable variability affecting the environmental distribution of this and other analytes within the watershed. DDT is known to be widely distributed in sediments throughout the Nashua River (e.g., 11D-94-11X, SA 12 background sampling locations), and the sediment quality adjacent to AOC 11 should be evaluated in the context of conditions throughout the watershed. The environmental variability in the distribution of 4.4'-DDT in Nashua River sediments is likely due to a number of

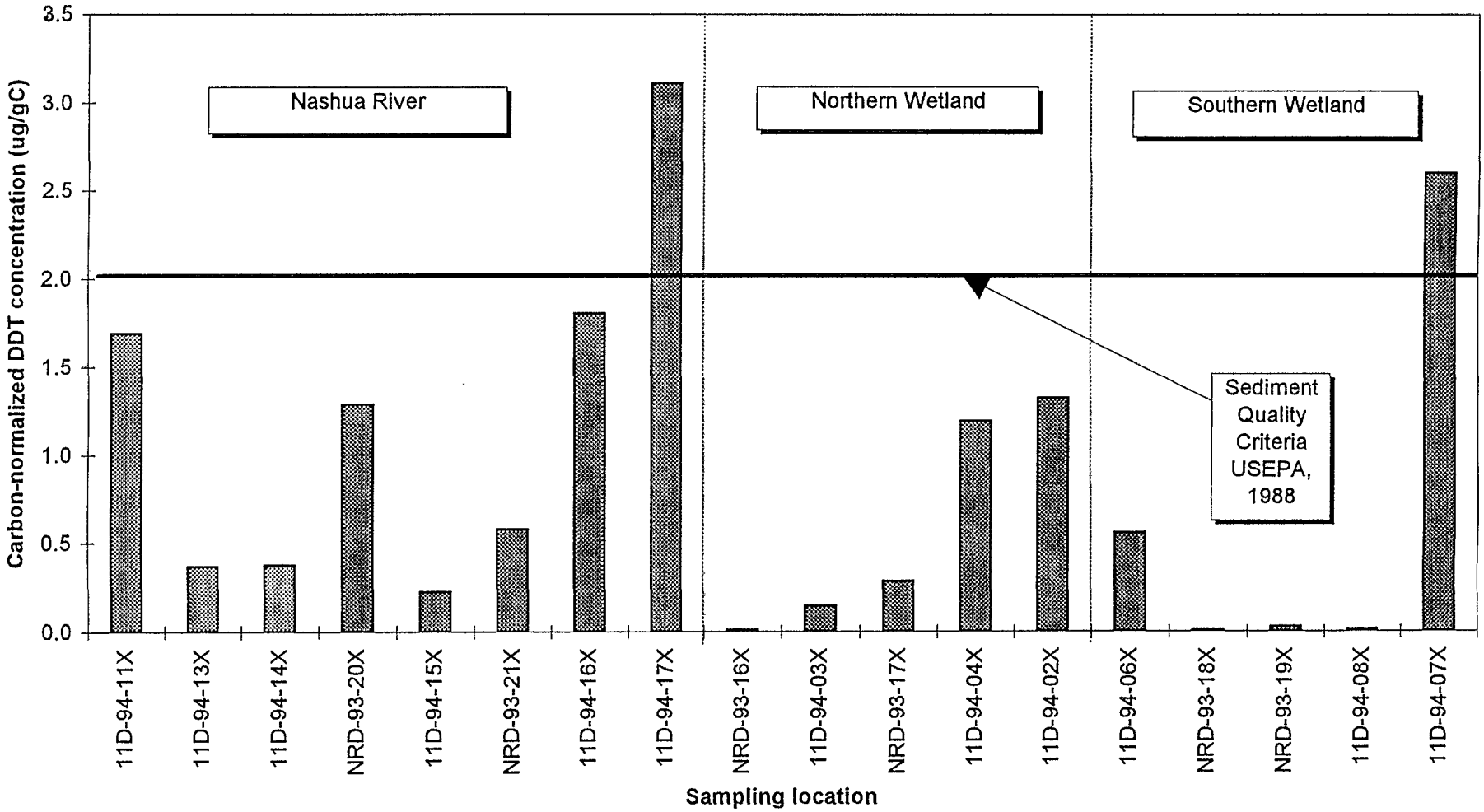
hydrogeomorphological factors, including those that influence particulate transport and deposition and sediment characteristics (e.g., grain size, Total Organic Carbon [TOC] content) at specific locations, as well as proximity to historical point and non-point source areas.

Consistent with equilibrium partitioning theory, the concentrations of 4,4'-DDT detected in river sediment are strongly correlated with the total organic carbon (TOC) content of the sediment ($R^2 = 0.861$). The measured TOC in the upstream reference was the lowest (0.4 percent) of all Nashua River locations sampled during the RI and based on equilibrium partitioning theory (USEPA, 1988) this sediment would be expected to contain lower concentrations of hydrophobic organic compounds (such as DDT) than the sediments collected adjacent to the site, which contain higher TOC levels. DDT concentrations detected in sediment samples adjacent to AOC 11 are in fact consistent with upriver sampling locations that contain comparable TOC levels (Figure C-1). Finally, as noted above, DDT concentrations in environmental media associated with potential migration pathways to the Nashua River are generally consistent with Devens background and there is no evidence that a separate source is present in the debris disposal area.

The potential ecological consequences associated with the presence of DDT in the Nashua River is a second important question. The RI did not explicitly evaluate risks associated with wildlife risk in Nashua River sediment because the screening benchmark employed was based on effects to aquatic receptors only. USEPA (1988) derived an interim sediment quality criterion (SQC) for 4,4'-DDT based on equilibrium partitioning theory. The SQC, expressed on a carbon-normalized basis, is 2.0 ug/gC, and was derived using conservative assumptions regarding biological uptake and wildlife exposures. The SQC was based on the lowest available effect level for wildlife (reduced productivity in brown pelicans, *Pelecanus occidentalis*, associated with the consumption of DDT-contaminated fish [USEPA, 1980]). The threshold for potential bioaccumulation related effects is considerably lower than those associated with direct toxicity to aquatic receptors. Table C-1 presents the measured organic carbon content and 4,4'-DDT concentrations of AOC 11 sediment; the carbon-normalized DDT concentrations are plotted in Figure 2. With the exception of 2 locations, the carbon-normalized DDT concentrations in AOC 11 sediment do not exceed the conservatively derived SQC. As indicated in Table C-1, the normalized DDT concentrations at 11D-94-17X (3.11 ug/gC) and 11D-94-07X (2.6 ug/gC) exceed the SQC. 11D-94-17X is located in the downstream reference wetland and 11D-94-07X

is located in the Southern Wetland along the debris area edge near the outlet to the Nashua River. The isolated nature of these exceedances and the conservative nature of the SQC suggest that ecological receptors are unlikely to be at risk due to DDT exposure in the vicinity of AOC 11. The slight exceedances of the SQC at isolated locations Would also not be expected to elevate prey fish tissue burdens above wildlife threshold levels.

Figure C-1 Carbon-normalized DDT concentrations in AOC 11 sediment



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DDT-normal

Table C-1						
Carbon -normalized 4,4'-DDT Sediment Concentrations						
AOC 11 - Debris Disposal Area						
Devens, MA						
		TOC_b		DDT_c		
AREA	$LOCATION_a$	mg/g	%	ug/g	ug/gC_d	
Nashua River	11D-94-11X	57.8	5.8%	0.098	1.69	
	11D-94-13X	3.66	0.4%	0.001	0.37	
	11D-94-14X	55.6	5.6%	0.021	0.38	
	NRD-93-20X	170.8	17.1%	0.22	1.29	
	11D-94-15X	22.2	2.2%	0.005	0.23	
	NRD-93-21X	109	10.9%	0.063	0.58	
	11D-94-16X	6.93	0.7%	0.0125	1.80	
	11D-94-17X	29.2	2.9%	0.0908	3.11	
Northern Wetland	NRD-93-16X	172	17.2%	0.001	0.01	
	11D-94-03X	198.5	19.9%	0.029	0.14	
	NRD-93-17X	203	20.3%	0.0578	0.28	
	11D-94-04X	150	15.0%	0.179	1.19	
	11D-94-02X	132	13.2%	0.175	1.33	
Southern Wetland	11D-94-06X	155	15.5%	0.086	0.56	
	NRD-93-18X	148	14.8%	0.001	0.01	
	NRD-93-19X	49.9	5.0%	0.001	0.03	
	11D-94-08X	124	12.4%	0.001	0.01	
	11D-94-07X	115	11.5%	0.299	2.60	
Notes:	a. Locations sampled during the AOC 11 RI (ADL, 1995); generally locations					
	organized in a downgradient order within each grouping					
	b. Total Organic Carbon (TOC) from Table 2-4 (ADL, 1995).					
	c. Analytical results for 4,4'-DDT in AOC 11 RI sediment samples. Data					
	presented in Table 4-1 (ADL, 1995); one-half Sample Quantitation Level					
	(SQL) used for non-detected results.					
	d. Carbon-normalized DDT sediment concentrations derived by dividing the					
	bulk sediment analytical result by the organic carbon content.					

ATTACHMENT 2
To Appendix C-1

Attachment 2

BENCHMARK COMPARISONS: Comparison of surface water analytical results to screening benchmarks indicates that risks to the aquatic community in the vicinity of AOC 11 are insignificant. Average and maximum Hazard Indices (HIs) are 5 and 7, respectively, with aluminum and lead the principal risk contributors. Aggregate risk in the upstream surface water sampling location is 2, with aluminum the primary risk driver.

The comparison of sediment analytical results to conservative screening benchmarks suggests a high likelihood that benthic macroinvertebrate community in the vicinity of AOC 11 has been impacted. Average and maximum HIs are 1,267 and 4,277, respectively, with the majority of the risk attributable to pesticides/PCBs and inorganics. As discussed in the response to "2a" above the general distribution of hydrophobic organic compounds throughout the Nashua River is correlated with the organic carbon content of the sediment matrix. Several of the sampling locations adjacent to AOC 11 contain elevated sediment TOC to which these compounds that are likely derived from various sources throughout the Nashua River watershed could adsorb. As discussed below, concentrations detected in sediment adjacent to AOC 11 are generally consistent with analytical results from similar depositional reference areas.

TOXICITY TESTS: Toxicity test results indicated toxicity to the fathead minnow, *Pimephales promelas*, in the river surface water sample collected adjacent to AOC 11. The basis for the observed toxicity is unknown as the non toxic upstream river surface water sample was chemically similar to the sample that was toxic to minnows.

Acute mortality was also observed in both benthic macroinvertebrate species exposed to sediment collected from the Nashua River adjacent to AOC 11 (ADL, 1995). 10-day exposure to bulk sediment with the amphipod, *Hyalella azteca*, resulted in 40 percent survival, which is significantly less than the 92 percent control survival results. Statistically significant mortality (as compared to the control) was also reported for the composite sediment sample collected from the upstream reference wetland (76 percent survival). In addition, a statistically significant 10-day acute response was observed with the midge, *Chironomus tentans*, exposed to the adjacent river sediment sample. Survival was 47 percent versus 90 percent in the control exposure;

survival in the upstream wetland composite sample was 55 percent (which was not significantly different from the control).

The cause of the toxicity noted in the adjacent river sample is unclear. A comparison of Hls, based on the analytical chemistry results for the toxicity test samples and sediment screening benchmarks, suggest that the toxicity observed in the river sediment sample adjacent to AOC 11 may be related to a non-chemical stressor (e.g., physical characteristics of the sediment matrix, nutritional factor). No acute mortality response was observed in the southern wetland composite sediment sample (HI = 713), whereas a significant response was observed in the adjacent river sediment sample (HI = 165). Cadmium was the only analyte detected at a maximum concentration in the adjacent river sediment sample; other analytes were detected at higher concentrations in the composite sample from the southern wetland (which did not exhibit acute toxicity to either test species). Cadmium was detected at a concentration of 9.91 µg/g, which is approximately 5.7 times higher than in the non-toxic upstream river sediment sample (1.74 µg/g).

Elutriate exposure to Nashua River sediment collected adjacent to AOC 11 resulted in significant toxicity in 2 pelagic (i.e., water column dwelling) test species (ADL, 1995). Weight gain in the fathead minnow was significantly less than the control following a 7-day exposure (0.22 vs. 0.36 milligrams, respectively) and the mean number of young produced by female water flea, *Ceriodaphnia dubia*, was less in the adjacent Nashua River, upstream reference wetland, and the southern wetland treatments relative to the control (2.8, 3.8, and 6.7 vs 14.6). Based on the chemical analysis of sediment elutriates used in these tests, risk estimates (based on surface water screening benchmarks) for the northern wetland composite and adjacent Nashua River samples are similar (407 vs 430). Cadmium, copper and lead are the only analytes detected at higher concentrations in the Nashua River sample as compared to the non-toxic northern wetland elutriate (concentrations were elevated by factors of approximately 2.1, 4, and 4.6, respectively). The number of detected pesticide analytes, and their concentrations, were greater in the nontoxic wetland composite elutriate sample.

The surface water and sediment toxicity test results cannot be easily explained with respect to the concentrations of chemical analytes detected in these samples. Although ADL concluded that

cadmium may be associated with the toxicity observed in the bulk sediment and sediment elutriate exposures for the Nashua River sample adjacent to AOC 11, this analyte was only detected in 3 of 16 surface soil samples from the debris disposal area and the maximum concentration was only 3.5 times greater than Devens background. In addition, cadmium was not detected in AOC 11 groundwater.

Exposure to Nashua River sediment elutriate did not produce a significant lethal response in *Hyalella azteca*, as was observed in the bulk sediment exposure. Interpretation of the elutriate toxicity results for the pelagic water flea and fathead minnow is problematic because these species would not naturally be exposed to sediment porewater and the test conditions represent an unrealistically conservative measure of toxicity to these sensitive organisms.

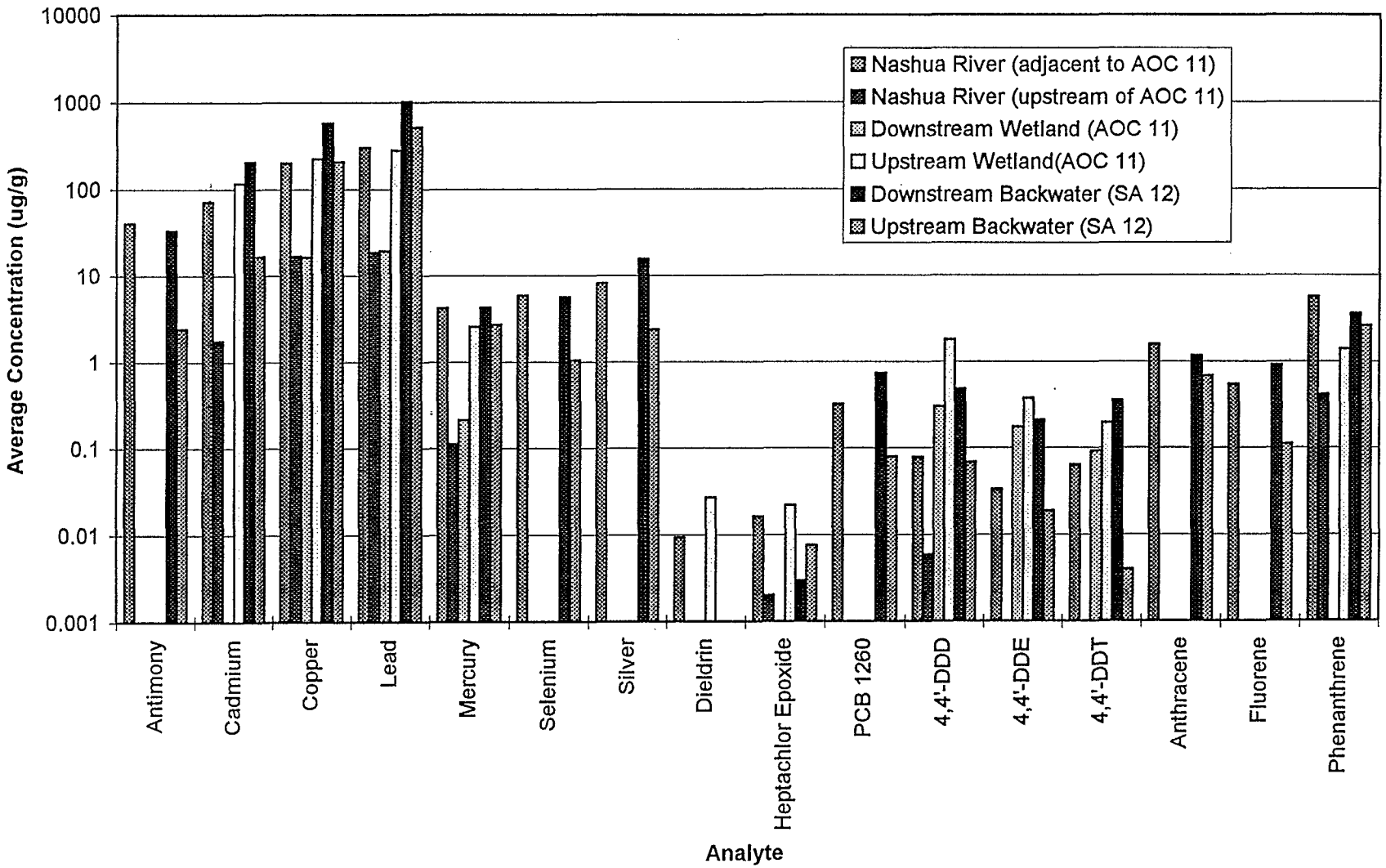
BACKGROUND COMPARISON: A single upriver sediment sampling location was used in the AOC 11 RI to characterize local background conditions in the Nashua River. Due to the substantially lower TOC content at this location and the considerable variability known to exist in the Nashua River, this upriver sediment sampling location is both an inappropriate and inadequate background location for comparison to the more depositional environment found adjacent to AOC 11. As a result, primary sediment risk contributors identified in the RI were compared to the concentrations of these analytes detected in depositional reference areas associated with the Nashua River. The four areas evaluated in this review include the following:

- Downstream wetland (11 D-94-17X) sampled during the AOC 11 RI program on 2 September 1994; TOC was 2.9 percent.
- Upstream wetland (11D-94-11X) sampled during the AOC 11 RI program on 30 August 1994; TOC was 5.8 percent.
- Downstream backwater area (12D-93-34X through -37X) sampled during the SA 12 Supplemental Sampling Investigation program; TOC ranged from 9.5 to 25.5 percent.
- Upstream backwater area (12D-93-29X through -32X) sampled during the SA 12 SSI program; TOC ranged from 3.5 to 14.6 percent.

The average concentrations of the primary risk contributors for Nashua River sediment and available reference areas are presented in Figure C-2. Only the average concentration of

anthracene and phenanthrene are somewhat elevated in Nashua River sediment samples collected adjacent to AOC 11 as compared to reference areas, concentrations of other risk contributors are comparable to reference areas (particularly the downstream wetland associated with SA 12). The three inorganic analytes (i.e., cadmium, copper, and lead) that were identified as potential effectors in the toxicity tests using Nashua River sediment were detected at higher average concentrations in the upstream wetland (AOC 11) and downstream backwater (SA 12) samples (Figure C-2). These results suggest that AOC 11 has not had a significant effect on Nashua River sediment quality. To conclude, the Army does not believe that removal of the landfill debris would demonstrably improve water or sediment quality in the adjacent reach of the Nashua River. However, due to significant public comments, the Army has agreed to complete debris removal at AOC 11.

Figure C-2 Distribution of Primary Risk Contributors in Nashua River Sediment



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ATTACHMENT 3

To Appendix C-1

Attachment 3

SA 12: Information obtained during the Supplemental Site Investigation (SSI) at SA 12 strongly suggests the contamination detected in the downgradient wetland/floodplain is most likely attributable to periodic flooding of the Nashua River and settling of particulate-bound contaminants in this deposition area rather than from a landfill source.

Ecological risks to terrestrial receptors that may be exposed to landfill surface soils or to wetland sediment in Area 1 are minimal, particularly considering the conservative screening approach employed in the Preliminary Risk Evaluation (PRE) conducted for this site. Concentrations of all potential risk contributors are substantially lower in Area 1 relative to landfill surface soils suggesting that the overland transport pathway is not a substantial one. The primary risk contributors for aquatic species in Area 1 sediment are heptachlor, arsenic, lead, and mercury. Heptachlor and mercury were not detected in SA 12 landfill surface soils and arsenic was not detected in surface soil above the established Devens background concentration. Area 2 sediment contains elevated pesticides, PCBs and inorganic analytes. Detected concentrations are typically at least an order of magnitude higher than in Area 1 sediment samples. In general, average and maximum concentrations detected in Area 2 sediment are equivalent to upriver Nashua River sampling areas. Incremental sediment risks (i.e., representing the component above Devens background) to aquatic organisms in Area 2, based on average and maximum HIs are 1.1 and 128.3, respectively, with the maximum concentrations of cadmium, heptachlor, and 4,4'-DDD the primary risk contributors. These two pesticides were not detected in landfill soils and cadmium was only detected in 2 of the 8 SI surface soil samples at concentrations below Devens background.

Figure C-3 presents a summary of the average sediment concentrations of the identified sediment risk contributors in Areas 1 and 2 as well as the upriver and downriver reference locations. The pattern of contaminant distribution in these 4 areas demonstrates that Area 2 is comparable to general conditions in the Nashua River and that Area 1 is unlikely to represent an important contributor to the elevated pesticide and inorganic concentrations detected in Area 2.

AOC 41: Contaminants associated with the Unauthorized Dumping Area do not represent a significant incremental risk to terrestrial ecological receptors and available information suggests that no complete migration pathway between the AOC 41 source area and New Cranberry Pond exists.

The AOC 41 RI concluded that New Cranberry Pond recharges groundwater rather than receiving groundwater discharge. The overland transport migration pathway also appears to be incomplete. No detected analytes in the surface soil/sediment samples collected downgradient of the disposal area exceed ecological screening benchmark values, and only beryllium (41D-92-03X) and sodium (all 7 samples) exceed Devens background. No disposal area surface soil risk contributor exceeds either ecological screening benchmarks or Devens background in these downgradient samples.

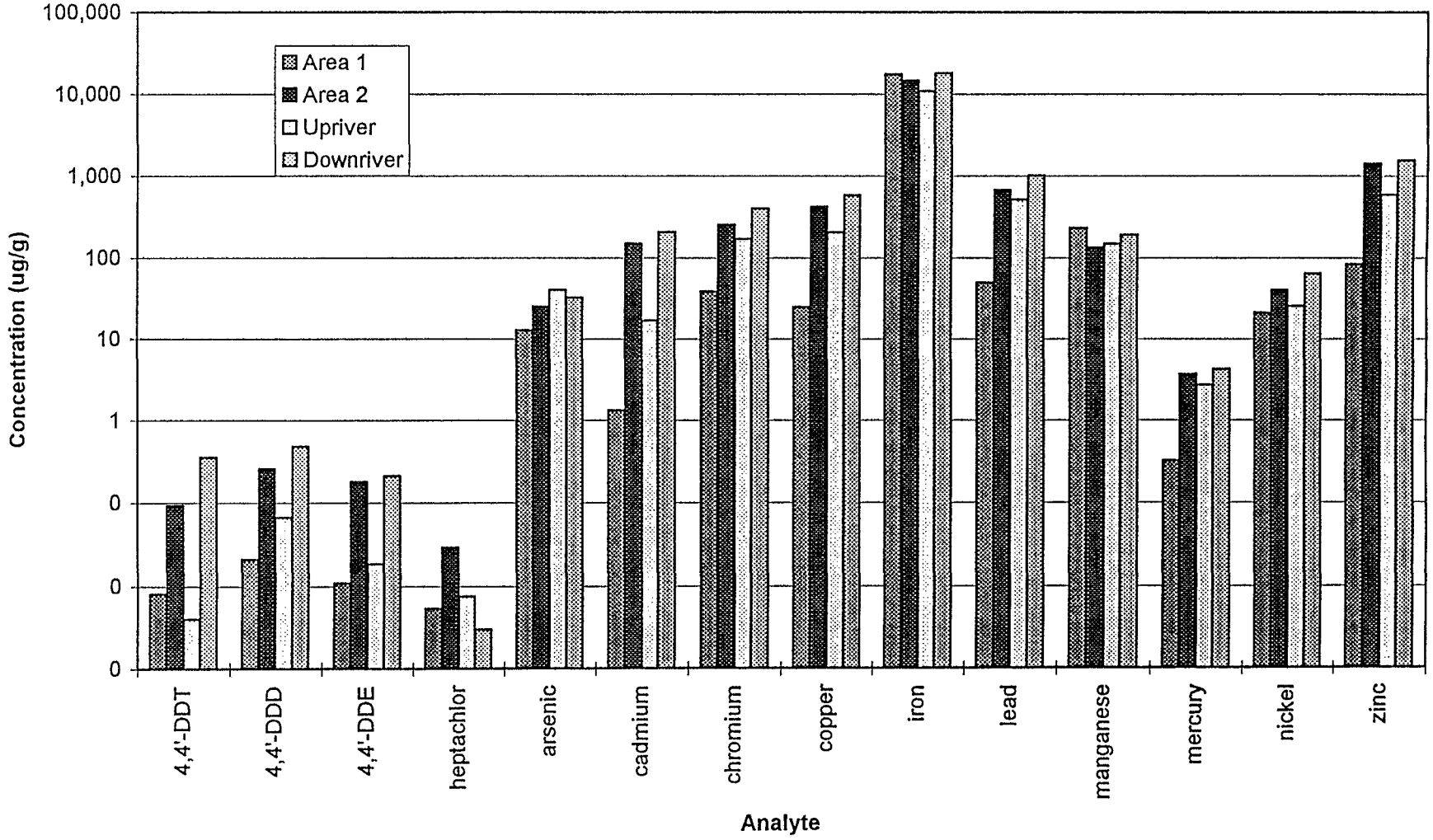
REFERENCES

Arthur D. Little, Inc., 1995. Draft Remedial Investigation Report, AOC-11 (Lovell Road Debris Disposal Area), Fort Devens, Massachusetts (in three volumes).

United States Environmental Protection Agency, 1980. *Ambient Water Quality Criteria for DDT*; USEPA, Office of Water Regulations and Standards, Criteria and Standards Division; PB81-117491; Washington, D.C., October 1980.

USEPA, 1988. *Interim Sediment Criteria Values for Nonpolar Hydrophobic Organic Contaminants*; Office of Water Regulations and Standards, Criteria and Standards Division; PB81-117491; Washington, D.C., May 1988.

Figure C-3 Comparison of Average Concentrations of Primary Risk Contributors in SA 12 Sediment



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Volume I
Pages 1 to 85

Public Meeting on Proposed Plan
for SAs 6, 12, and 13, and
AOCs 9, 11, 40, and 41

U.S. Army
Reserve Forces Training Area
Devens, Massachusetts

MODERATOR: Greg Sobel

Held at:

Devens Inn and Conference Center
100 Sherman Street
Devens, Massachusetts
Thursday, January 8, 1998
9:00 p.m.

(William J. Ellis, Registered Professional Reporter)

Page 2

PROCEEDINGS

MODERATOR SOBEL: A couple of words here from James Chambers.

MR. CHAMBERS: Okay. We're going to proceed with the public hearing now.

It's nine o'clock. I'm going to suggest that we hold a two-hour period here, that we go till eleven o'clock. And then since it's been suggested that we hold another public hearing, then we can continue this at the next hearing. We have not determined a date yet, but I guess we'll be in contact with Ms. Hamel to secure a date at the Ayer Public High School for the next meeting.

So, again, this is a formal public hearing. We do have a court stenographer here recording your comments. And I'll ask that when you speak, that you announce your name. And if your name requires a little spelling, I'd ask that you spell it out for the stenographer as well.

And I'll ask that you also announce your address because as was mentioned earlier, as part of the Responsiveness Summary, anybody that does make a formal comment will receive a Responsiveness Summary in the mail returned to them.

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So, we're going to go ahead kind of the same as we did with the question and answer period. Please take turns, and we will try to get through as many people as possible this evening. Thank you.

MODERATOR SOBEL: Thanks, Jim.

A couple more words about the ground rules here because this is a very different part of the meeting than what we just concluded.

This is your opportunity to place your comment in the public record. You should not be expecting that you're going to have a response immediately to any comment that you make. You can expect that the folks from the Army and from the EPA and the DEP will be listening closely to your comments, and they're going to be reading your comments because they're going to show up in the formal record for all the comments that are being taken down by the court stenographer.

Okay. The way we're going to organize this is we're going to ask folks to line up who want to make comments. And let's take this row here [indicating], this last row that Jim is sitting in, for folks who want to make a comment. And just sit somewhere in this row, and we'll from the

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beginning of the row. And after you've made your comment at the mike up here, we'd invite you to leave this row and sit somewhere else.

As Jim said, you can indicate your address. If you'd rather not say your address out loud, we have a sheet – and you do want to have a response to your comments mailed to you, instead of speaking out your address, you can write it down on a sheet that's right here on this table. So you can indicate your name and address, and the comment response will be mailed to you in that fashion.

I also want to remind you that if you'd rather not speak but you still want to submit a formal comment, you can do that in writing. There are forms here on this table. There are forms by the door. And you can leave your comment in writing in the – there's a little box there right by the door as you leave tonight, or you can mail it in later.

And what we just heard from Jim Chambers is that there will be an additional opportunity after this evening in response to the invitation issued by the selectperson from the Town of Ayer.

A couple more things about how we're going

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[1] to do this in terms of ground rules. I want to be
[2] really sure that everyone has an opportunity – or
[3] as many people as possible to make your comment
[4] tonight so we're going to ask you to keep your
[5] comment to three minutes or less. And if we get
[6] through all of the folks who have an initial comment
[7] to make, then we'll come back and you can add
[8] to those comments. Let's see if we can work with
[9] that kind of limit just to make sure that everybody
[10] gets a chance.
[11] We'll go until eleven o'clock rather than
[12] the 9:30 end time. Thank you all for your patience
[13] as we do this.
[14] Once again, come up to the mike, introduce
[15] yourself, offer your comment – stick to the
[16] issues. Please don't personalize the issues –
[17] write down your address on the sheet, return to your
[18] seat; and then we'll go on to the next comments.
[19] So any questions about the process we're
[20] going to use?
[21] Yes?
[22] **AUDIENCE MEMBER:** Three minutes is a very
[23] short amount of time.
[24] **THE REPORTER:** Excuse me. I can't hear if

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[1] you're not on the microphone. I'm sorry.
[2] **MODERATOR SOBEL:** Right. The question is
[3] whether we can have a longer period for comments
[4] than three minutes.
[5] Of course, the concern is just that we have
[6] time for everybody to get through the comments.
[7] What would you propose?
[8] **AUDIENCE MEMBER:** Ten.
[9] **MODERATOR SOBEL:** The concern – my concern
[10] is that if we allow ten minutes per person, that
[11] we're going to eat up all the time that we have
[12] before people have an opportunity – everyone has an
[13] opportunity to make a comment who wants to.
[14] **LAURA BRIDGES:** Mr. Sobel?
[15] **MODERATOR SOBEL:** Yes?
[16] **LAURA BRIDGES:** I'd like to request the
[17] group's permission to make an exception for Laurie
[18] Nehring who's prepared something in writing from
[19] PACE with solid data for the group.
[20] And what do you estimate the time you need,
[21] Laurie? Ten minutes or so?
[22] **LAURIE NEHRING:** Ten minutes.
[23] **LAURA BRIDGES:** And I'm sure there would be
[24] plenty of time for everyone's questions. If that's

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[1] agreeable to the group –
[2] **AUDIENCE MEMBER:** Could you speak up,
[3] please?
[4] **MODERATOR SOBEL:** There's a proposal coming
[5] from the folks from PACE is that they have an
[6] opportunity to make a longer comment, that they have
[7] a prepared comment that would take ten minutes; and
[8] they want to make that from the outset here.
[9] Jim?
[10] **JIM CHAMBERS:** Jim Chambers, BRAC
[11] Environmental Coordinator.
[12] Again, we're already in the public formal
[13] hearing so please announce your name before you
[14] comment because they do have to be recorded.
[15] Ms. Bridges, if you would announce your
[16] name and I guess write your address down, please,
[17] and Ms. Nehring, also, as we do need to account for
[18] this.
[19] **MODERATOR SOBEL:** And, Jim, did you want to
[20] say something?
[21] **JAMES BYRNE:** I would think it would be
[22] appropriate for them to have ten minutes.
[23] **MODERATOR SOBEL:** Does anybody have an
[24] objection?

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[1] Then we'll modify our rules here, and we'll
[2] invite – I'm sorry. I've forgotten your –
[3] **LAURIE NEHRING:** Laurie Nehring.
[4] **MODERATOR SOBEL:** Laurie Nehring. The
[5] proposal, then, Laurie Nehring will be given a
[6] ten-minute opportunity to make a presentation; and
[7] then we'll go on with individual comments, and we'll
[8] try to keep those to a shorter time frame of about
[9] three minutes.
[10] Is everyone okay with that?
[11] Okay. You want to start, Laurie?
[12] **LAURIE NEHRING:** My name is Laurie
[13] Nehring. I'm a resident of Ayer. I'm also the
[14] president of People of Ayer Concerned about the
[15] Environment. And I've prepared something that I've
[16] titled "The Five Pearls Of Ayer."
[17] Living on top of a hill in a residential
[18] section of Ayer, I see many people of all ages out
[19] walking each day. I am a newcomer to this town. As
[20] often as I can, I, too, walk the quaint, quiet
[21] streets observing the turn-of-the-century
[22] architecture mixed nicely with brand new homes.
[23] Cradled between the downtown residential
[24] area are five connecting ponds formally known as

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[1] Ayer's five great ponds, much like a string of
[2] pearls. Long-time residents remember decades ago
[3] when they could swim and fish in the sparkling clear
[4] water of all the ponds.
[5] Ayer is a small New England town of just
[6] over nine and a half square miles. The town has
[7] been heavily influenced over the years by Fort
[8] Devens in both positive and negative ways. The base
[9] closure offers new opportunities and presents new
[10] concerns.
[11] Tonight, we are asked to consider the
[12] Army's proposal to place another Army landfill in
[13] Ayer. As a representative for PACE, I strongly
[14] oppose the Army's proposed location for the
[15] consolidation for both technical and economic
[16] reasons. Here's why.
[17] One. First and foremost, we are extremely
[18] concerned about the materials which will be brought
[19] to the new consolidated landfill despite the claim
[20] for a leakproof, quote, state-of-the-art, end quote,
[21] facility.
[22] The Army proposes to separate out hazardous
[23] from nonhazardous waste. Only the latter will come
[24] to the new cell, But there is no clear explanation

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[1] of how hazardous materials will be separated out
[2] despite repeated requests for this information.
[3] We cannot overemphasize the importance of
[4] this crucial task. Hazardous waste cannot be
[5] included in the consolidated site.
[6] The Army presents a picture of six, quote,
[7] debris, end quote, landfills, i.e., tree stumps,
[8] bricks, beer bottles, and other seemingly benign
[9] materials. People attending PACE meetings have been
[10] asking us, "Why are we spending $18 million to
[11] remove tree stumps?"
[12] The amounts of chemical contamination found
[13] at each of these six landfills has not been well
[14] presented to the public or to the press. However,
[15] chemical contaminants have been found at each of
[16] these six landfills.
[17] DEP stated in its review of the Army's
[18] April 1997 Draft Plan for Consolidation, quote,
[19] MADEP's review of the data within the preliminary
[20] reports shows that each of the landfills. With the
[21] exception of SA 6, carries specific risk to human
[22] health and the environment, end quote.
[23] And, quote, of all – all the sites, with
[24] the exception of SA 6, do constitute a risk to fish

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[1] and wildlife, end quote.
[2] Here are some of the contaminants they
[3] found: Carcinogenic petroleum aromatic
[4] hydrocarbons; 17 different PAHs, one of them found
[5] at one hundred times the Region III risk –
[6] acceptable risk; chloroform in groundwater found at
[7] three times the Region III standard risk; heavy
[8] metals; pesticides; DDT, its derivatives;
[9] explosives; nitroglycerin. The list can go on.
[10] It's very disturbing that PACE had to
[11] really probe to find this information on specific
[12] chemical hot spots which have been identified at the
[13] site. How are citizens to be informed when the
[14] potential impact on human health hazards has not
[15] been presented by the Army in a balanced way?
[16] We do request that the Army consider having
[17] a second hearing in the town of Ayer as was
[18] suggested by Pauline Hamel.
[19] Furthermore, the Army's testing program has
[20] been very limited in scope so that they do have some
[21] idea of the contents of each of these landfills; but
[22] this is far from adequate in giving a complete
[23] picture. Only during excavation will the true
[24] contents be fully revealed.

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[1] Separating out the hazardous waste from the
[2] nonhazardous waste during the excavation is therefore a
[3] critical task. It will not be a simple job. First,
[4] there's a lot of stuff to be excavated.
[5] According to the Army, the estimated
[6] quantity of materials to be relocated will fill at
[7] least 10,000 trucks. Maybe more. At a bare
[8] minimum, each of these truckloads should be analyzed
[9] for separation. The appropriate toxicity test costs
[10] in the vicinity of $200 per test. Tuesday night,
[11] John Reagan said more like $2,000 per test. This
[12] test is slow, taking at least 24 hours per test,
[13] assuming an on-site laboratory is available. We've
[14] heard nothing of an on-site laboratory.
[15] The logistics alone are overwhelming. Has
[16] a traffic study been investigated? Will these
[17] 10,000 trucks run right by the elementary school
[18] where Parker Charter School will be relocated? Will
[19] others be impacted by the traffic?
[20] And what about the cost? The Army's
[21] proposal needs to include a specific plan and budget
[22] to follow through on the appropriate testing. The
[23] Army must be able to demonstrate how they will
[24] isolate hazardous wastes scientifically, not

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[1] depending on sight, like staining of the soil, or
[2] smell. The chemicals of concern may have no odor or
[3] may change appearance after a long period of time.
[4] These might be missed.
[5] The budget for chemical analysis should be
[6] included in the comparison for alternative
[7] proposals. It currently is not there. It is
[8] certainly possible that the cost of proper
[9] laboratory analysis alone will double or triple the
[10] budget rendering it far more costly than the Army
[11] has calculated.
[12] Number two. This site is very close to
[13] downtown Ayer. It is 2,200 feet from our downtown.
[14] The town's only park, Pirone Park, is even closer.
[15] The landfill will be – will the landfill be visible
[16] from both commercial and residential areas in Ayer?
[17] What is the maximum height of this landfill?
[18] Written reports by the Army state a height of
[19] something like 60 feet. During a site walk, an EPA
[20] official indicated only 30 feet. Which is correct?
[21] Real estate values which have a site line
[22] to the landfill will certainly be negatively
[23] impacted.
[24] Number three: The site is not appropriate

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[1] because it will be located on top of a – an
[2] important aquifer. It is connected hydraulically to
[3] the same high-yield aquifer which feeds both Ayer
[4] and Devens water supply wells.
[5] State regulations which protect water
[6] supplies identify an area called Zone II. The
[7] Zone II delineated for Devens wells comes within
[8] only three-tenths of a mile of the proposed new
[9] landfill.
[10] Zone IIs are something of an art. The
[11] Zone II for Ayer's public water well is a bit
[12] further away, but it parallels the shape of the
[13] Devens wells.
[14] Both Ayer and Devens are growing. The
[15] demand for water from these two wells will
[16] undoubtable increase. Have Zone II studies been
[17] done to delineate the drawdown if both wells are
[18] used at full capacity at the same time? There is
[19] very little room for error.
[20] This information is critical in making sure
[21] that the landfill leachate will not be drawn into
[22] public drinking water. The high-yield aquifer
[23] surrounding Plow Shop Pond and Grove Pond must be
[24] protected for future development of well fields.

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[1] Number four. This landfill will become
[2] permanent wherever it is placed. Once an area
[3] becomes designated as a landfill, it can never
[4] realistically be reused for anything else.
[5] In understanding the problems of any
[6] landfill, we must start with the underlying
[7] principle, that is, regardless of our best
[8] state-of-the-art designs, scientific literature
[9] makes it clear that all landfills leak. EPA and DEP
[10] do not dispute this fact.
[11] Why do they leak? The clay layer on the
[12] bottom breaks and cracks open over time. Plastic
[13] liner tears or degrades from contact with common
[14] chemicals found in landfills. On the surface, caps
[15] open from weathering, erosion, and unwanted
[16] vegetation. Animals dig holes. Rainwater enters,
[17] mobilizing chemicals which leach out of the
[18] landfill.
[19] Active maintenance helps control landfill
[20] leaks, but there can be no guarantees, therefore,
[21] all landfills add permanent risk to the surrounding
[22] environment.
[23] The proposed site for consolidation
[24] adjacent to Plow Shop Pond and Shepley's Hill

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[1] Landfill is not suitable for a landfill. U.S.G.S.
[2] maps identify a high transmissivity which would
[3] enable contaminants leaking from the landfill to be
[4] picked up in groundwater and migrate readily to Plow
[5] Shop Pond and on to the Nashua River. PACE's field
[6] studies back this information.
[7] We observed sandy and gravelly soils at the
[8] proposed site during a recent site walk led by Jim
[9] Chambers. It was explained that this area was a
[10] former lake bed and that sand and gravel was
[11] natural. Sandy soils are very porous and should be
[12] avoided when siting a new landfill.
[13] Five. Subsurface materials underlying the
[14] proposed site for this landfill have not been
[15] studied adequately.
[16] The Army has only three monitoring wells in
[17] the area that is at least eleven acres in size.
[18] This is statistically meaningless. Three monitoring
[19] wells are routinely used by consultants at a gas
[20] station for gasoline storage tank studies.
[21] We are very concerned about what's down
[22] there. The history of what's there has been –
[23] stuff that's been buried can sometimes be
[24] interpreted from aerial photographs. A series of

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[1] aerial photographs have been analyzed by experts at
[2] EPA and DEP.
[3] From 1972 through '82, a rectangular area
[4] which looked much like a swimming pool was noted.
[5] It disappeared from photographs after 1982. Each
[6] photograph interpretation specialist from each
[7] agency concluded separately that this was most
[8] probably a, quote, liquid disposal waste site, waste
[9] area, end quote. The liquid waste sits directly on
[10] the footprint of the proposed landfill site
[11] according to the maps obtained from the Army Corp.
[12] of Engineering – excuse me – from the Department
[13] of Environmental Protection. There is some evidence
[14] the waste was a – a former transformer dump, which
[15] would contain PCBs. The Army needs to make efforts
[16] to determine what has happened to this rectangular
[17] area and verify that it has been removed.
[18] Number five [sic]. My final comment
[19] concerns the ecosystem surrounding the two
[20] connecting ponds, Plow Shop and Grove Pond. These
[21] two ponds, the last of our string of pearls, have
[22] suffered greatly over the years from industrial
[23] pollution and from activities by the Army. High
[24] concentrations of chemicals, including known

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[1] carcinogens, have been identified in the sediment.
[2] Swimming or eating the fish from these ponds is
[3] dangerous and currently prohibited.
[4] Fortunately, the EPA and DEP have targeted
[5] the area around Grove Pond and Plow Shop Pond for a
[6] Superfund cleanup which is so clearly needed. Jim
[7] Byrne from the EPA has taken the lead in getting
[8] this cleanup project underway. Potentially
[9] responsible parties, including the Army, will be
[10] sought to help fund remediation of the ponds. PACE
[11] soundly applauds this work.
[12] However, the placement of this new landfill
[13] will interfere with the remediation of the ponds.
[14] It makes no sense to go through costly remediation
[15] projects using taxpayer money to protect these ponds
[16] and then place a landfill right in the middle.
[17] Point and nonpoint sources of pollution need to be
[18] removed or remediated, not added.
[19] Now, all that being said and stated, let me
[20] make it clear. We do support the remediation
[21] efforts proposed at each of the former Fort Devens
[22] landfills which will remove debris and chemical hot
[23] spots from wetlands and other sensitive areas. The
[24] more extensive the cleanup, the better. However

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[1] the research done by PACE dictates that the site
[2] selected for consolidation adjacent to Shepley's
[3] Hill and Plow Shop Pond is wholly inappropriate.
[4] In conclusion, the Army needs to
[5] investigate alternative sites. A new cost
[6] comparison needs to include the real cost of
[7] separation versus hauling it off site. We request
[8] that the first priority be long-term protection of
[9] human health and the environment,
[10] Thirty years ago, the Nashua River was a
[11] mess. With a great deal of hard work and careful
[12] planning, it has made a tremendous recovery. I, for
[13] one, envision a future Ayer, a spirited and
[14] prosperous New England town, with five very special
[15] sparkling ponds, our pearls, proudly cradling our
[16] town once again.
[17] Thank you.
[18] **MODERATOR SOBEL:** Thank you, Laurie.
[19] Okay. I see six people lined up – we're
[20] sort of figuring this out as we go – and we'll go
[21] down the line. And if there are other people – or
[22] maybe there's someone behind you, sir – other folks
[23] are welcome to come and sit in these seats along the
[24] edge here; and we'll get to you all.

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[1] I do have a note here that I guess some
[2] folks had earlier asked for a copy of the slide
[3] presentations. There was a thick packet that was
[4] available initially. And we have located some more
[5] or maybe copied off some more of those. So there
[6] are more of those available up by the door if you'd
[7] like that. Okay?
[8] And we'll go to you next. Is it Martha?
[9] **MARTHA CRAFT:** Yes.
[10] **MODERATOR SOBEL:** Okay. Now, we're going
[11] back to about a three-minute time frame if you can,
[12] please.
[13] **MARTHA CRAFT:** Okay.
[14] **MODERATOR SOBEL:** Thank you.
[15] **MARTHA CRAFT:** My name is Martha Craft,
[16] Eight Calvin Street, Ayer, Massachusetts.
[17] And based on – to start with – what I
[18] heard this evening, it seems that the sites that
[19] have been eliminated from consideration for this
[20] landfill have been based on old studies, unknown
[21] data, speculation, and the environmental and use
[22] concerns of the land that the Army is currently
[23] using.
[24] Shepley's Hill is in a former wetland,

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[1] and – it was said tonight that it's not in the
[2] 100-year flood plain; but I question that fact. I
[3] don't know where that came from. I've never seen
[4] any kind of a map with a 100-year flood plain, and I
[5] think it would be nice to see that.
[6] There's been no true commitment in all of
[7] the meetings that I've attended to the future
[8] cleanup beyond that for the first thirty years,
[9] there will be testing or whatever. You say that
[10] nothing's going to leak, but you don't even know if
[11] there is – or what is leaking out of the present
[12] Shepley Landfill. How can we feel that – feel
[13] comfortable and trust the promises of future
[14] cleanup?
[15] I personally – I think that – excuse me.
[16] I think that relocation of the landfill to
[17] any location at the present time is premature. We
[18] need complete, detailed, accurate, up-to-date
[19] studies before we make any move on the landfills to
[20] another site.
[21] I personally believe that all of the
[22] landfills should be removed from the Deven's site,
[23] including the present Shepley Hill. One way that
[24] this can be dome or that it seems to me it could be

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[1] done is perhaps even a more cost effective manner
[2] than trucking it out, since there's a lot of rails
[3] that are running into the Deven's site, is to use
[4] rail to move it. And I question whether that's even
[5] been looked at.
[6] I personally feel that just as one cancer
[7] cell left untreated has a potential future
[8] premature death – the key words here are potential
[9] and future, words that have been thrown around a lot
[10] this evening – that leaving hazardous waste in
[11] sites on Devens can also lead to future premature
[12] death.
[13] Short of moving all of the landfills off
[14] site, I feel that the second alternative, though not
[15] really acceptable to me, is to move it to Site
[16] AOC 9. Since the initial elimination of this site
[17] was based on old studies and inaccurate information
[18] according to the answer that I received this
[19] evening, and since access has to be made to that
[20] site to remove the debris, I recommend instead of
[21] removing it, that we move the debris from the other
[22] sites to AOC 9 if we cannot remove it completely
[23] from the Devens sites.
[24] Thank you.

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[1] **MODERATOR SOBEL:** Thank you, Martha.
[2] Yes, ma'am. Is it Louise?
[3] **LOUISE ROGERS:** Louise Rogers.
[4] **MODERATOR SOBEL:** Say it again to the mike.
[5] **LOUISE ROGERS:** Rogers, R-o-g-e-r-s.
[6] Yes, I'm definitely against the landfill in
[7] Ayer next to Shepley Hills because I feel the best
[8] guarantee not to have any leakage is not to have the
[9] landfill in the first place.
[10] Our DEP and EPA are promising to keep a
[11] good eye on it for thirty to forty years, but there
[12] have been communities across this country – and the
[13] latest one I read about had 358 families in homes
[14] and apartment buildings. The entire area had to be
[15] plowed down because of the contamination. It's
[16] Escambia in Pensacola, Florida. And it's going on
[17] right now. It will take two or three years.
[18] The EPA is going to buy these homes, but
[19] you can be sure they're not going to get their
[20] market value.
[21] Where was the EPA when these industries
[22] were being developed in the area? I'm sure those
[23] residents of the area – community asked help in
[24] preventing industry from coming into the

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[1] neighborhood. But little by little, it encroached
[2] in; and it caused a lot of toxic waste.
[3] And I'm sure to bring this to a forefront,
[4] many people had to come down with some very serious
[5] diseases. And those people that don't have disease
[6] have to uproot entire families. So – it wasn't in
[7] Massachusetts. We've never had anything – except
[8] for Woburn. But we certainly don't want to start in
[9] Ayer.
[10] To prevent it, just do not put a dump in
[11] Ayer. We don't need it. The Ayer landfill is doing
[12] a very nice job of trucking our waste and
[13] recycling what we don't send to the trash to
[14] energy. So I would just like to suggest that Devens
[15] does the same.
[16] **MODERATOR SOBEL:** Thank you, Louise. And
[17] Jim is reminding me that if you can put your name
[18] and address down, then we'll be able to get
[19] responses to your comments out.
[20] Yes, sir.
[21] It's made for the average-height person.
[22] You're taller than average.
[23] **PATRICK HUGHES:** My name is Patrick
[24] Hughes. I live at 27 Groton Harvard Road in Ayer.

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[1] This statement is in reference to the
[2] proposal for remediation of the Superfund dump sites
[3] to the Shepley Hill area in the Town of Ayer.
[4] I want to thank the Base Realignment And
[5] Closing Environmental Office, the Massachusetts
[6] Department of Environmental Protection, and the
[7] Environmental Protection Agency for this opportunity
[8] for public comment. It is, however, with very
[9] little regret that this statement will not be
[10] supportive of your proposed plan.
[11] With all the studies, the pressures of
[12] planning for the Devens redevelopment, and the
[13] bureaucratic dialogue, I feel that something is
[14] being lost in the shuffle. There is an
[15] accountability to environmental concerns that is
[16] being forgotten. I wish to simplify and clarify
[17] what I believe to be the issues and the widespread
[18] objections to this plan.
[19] To create a framework for this argument,
[20] imagine for a moment that you are in Pirone Park.
[21] You know that place. It is where the Army built the
[22] play structure for the children of Ayer to enjoy.
[23] In front of you is Gove [sic] Pond. You cannot swim
[24] in it. You cannot fish in it. You cannot drink it

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[1] because of years of industrial abuse.
[2] Now, move to the spit of land between Gove
[3] Pond and Plow Shop Pond, you know, where the tannery
[4] and the fuel dump used to be and the rails still
[5] are. Pick up some of that soil and smell it. Does
[6] it have the rich, clean smell of earth; or does it
[7] smell like engine sludge from years of
[8] contaminants? And remember to wash your hands
[9] after, just not in the ponds.
[10] Look out into Plow Shop Pond that you also
[11] cannot swim in, fish in, and drink and ask yourself
[12] isn't his area damaged enough? Remember that image
[13] of Pirone Park for the children of Ayer.
[14] Look across Plow Shop Pond at the old
[15] dump. The studies have told us that if there is any
[16] leaching from the capped 84 acres of the proposed
[17] landfill, that the water tables will move it away
[18] from the Ayer Town wells. It will move to the
[19] Nashua River basin. Wasn't that one of the
[20] environmental success stories, the cleanup of that
[21] river? Why is that acceptable? This will be the
[22] first of many accountability issues.
[23] Originally, four plans were put forth; but
[24] only one remains. Presented simply, they are the

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[1] Building 202 site, rejected because the Devens Reuse
[2] Plan finds the site valuable for rail, industrial,
[3] and other uses. So do economic issues outweigh the
[4] environmental ones with environmental agencies?
[5] The Study Area 15 site, rejected it because it
[6] is a sensitive environmental area and would also get
[7] in the way of the Army's ongoing training. If this
[8] new landfill is so state of the art, what is the
[9] problem with putting it there? And if it is such a
[10] sensitive area, why is training okay?
[11] The North Post Landfill, rejected because
[12] of concerns about groundwater purity. Remember
[13] leachate in the Nashua River? Why is this not a
[14] problem at Shepley's Hill?
[15] Shepley's Hill. Well, the plan is well
[16] documented. What this seems to be about is the
[17] Army, which had input at the planning stage, does
[18] not want the landfill. And the Devens redevelopment
[19] organization, which had input at the planning stage,
[20] does not want the landfill. So this plan has been
[21] steamrolled along. And now that the people of Ayer
[22] can comment at the very end of the process, and they
[23] clearly do not want the landfill, are we going to be
[24] listened to?

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[1] Remember again that image of Pirone Park
[2] and the children of Ayer. Remember the two polluted
[3] ponds and the dirty land between. Remember the 84
[4] acres of the old landfill temporarily capped.
[5] Hasn't this little corner of the earth near where
[6] the children play been ruined enough? It is your
[7] studies and reports that clearly say that the levels
[8] of pollutions are such this area can bear no more.
[9] Shouldn't all of you who represent an
[10] environmental agency feel accountable to your
[11] mandate? Your very existence is to monitor and
[12] clean up our environment. Why are you not on this
[13] side of the forum asking these questions instead of
[14] defending these unacceptable solutions?
[15] The Army should take the lead for dealing
[16] with this landfill into its own area for the Army
[17] created the problem. The Devens redevelopment
[18] organization owes its existence to this base
[19] becoming available and should understand that it has
[20] a responsibility for the problems as well as the
[21] profits.
[22] The town of Ayer will enjoy the economic
[23] boon of Devens, but it will also bear the increased
[24] traffic as thousands of workers go to their new

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[1] jobs. Our roads will fill up with eighteen-wheelers
[2] as the raw materials and goods move through our
[3] town. Why do we also have to bear the Superfund
[4] cleanup leftovers of 100 years of unregulated
[5] dumping? This is not the way to treat your
[6] neighbors. This is not your mandate as
[7] environmental agencies. You need to clean this area
[8] up, not pollute it more.
[9] Thank you.
[10] **MODERATOR SOBEL:** Thank you, Patrick.
[11] **CORNELIUS SULLIVAN:** Good evening. My name
[12] is Cornelius Sullivan. I'm a resident of Ayer and
[13] also a local attorney.
[14] And with no disrespect to you,
[15] Mr. Moderator, I'd just rather turn my back on one
[16] person than on my neighbors here and in Ayer, sir.
[17] I spent a great deal of time with the
[18] people from PACE trying to get up to speed on what
[19] the consolidated landfill issue is all about; and
[20] what I found discouraging over the last couple
[21] months is that every meeting that we've gone to with
[22] the people from the Army, DEP, and the EPA present,
[23] the more we asked questions, the more we find out
[24] about the hazards that are to be proposed by the

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[1] consolidated landfill site.
[2] I can remember my first involvement with
[3] the people of PACE, was actually invited to walk the
[4] proposed site of this consolidated landfill. And as
[5] we took the bus tour out to the site, we happened to
[6] pass by piles of dirt that is here on Devens covered
[7] with tarps and tires to hold the tarps down. It
[8] never dawned on us to ask what was under the tarps
[9] and where that material was going to.
[10] About a month after taking that walk and
[11] after meeting after meeting and asking more
[12] questions, we found out that with the consolidation
[13] of the six landfill sites to the proposed site next
[14] to the Shepley Hill Landfill, that part of the soil
[15] they want to use to cover this landfill will be the
[16] soil that's under those tarps with the tires holding
[17] the tarps down. Soil which is contaminated by oil.
[18] Soil which was dug up out of the ground by all the
[19] underground oil tanks that have been removed since
[20] the Army has left Devens.
[21] That's the type of further questioning that
[22] the people of PACE have had to do to really get to
[23] the bottom of this issue. That's the kind of hold
[24] the information to the vest that we as residents of

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[1] Ayer have had to fight against the Army, the DEP,
[2] and the EPA.
[3] When I see – I didn't have a chance to get
[4] in here for the informational session from 6:30 to
[5] 8:30, having thought that through these past months
[6] I probably was caught up to speed with whatever they
[7] would be presenting to the group tonight. The first
[8] thing I did when I came into the room – excuse
[9] me – was to look for a poster board that was
[10] actually at the last Saturday meeting that PACE held
[11] at the Ayer police station. It was a poster board
[12] that I thought was perhaps most telling. It's also
[13] a poster board that I do not see in the room
[14] tonight.
[15] It's a poster board that shows in purple
[16] all of the aquifers that surround Devens. It's a
[17] poster board that shows that Shepley Hill Landfill
[18] actually sits in one of those aquifers. It's a
[19] poster board that shows that the site – the
[20] proposed site of the consolidated landfill will be
[21] placed in an aquifer. It's a poster board that
[22] shows a lot of white area that does not continue –
[23] or does not have aquifers beneath it that hasn't
[24] been considered yet as a site for the proposed

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[1] consolidated landfill, and you have to ask, "Why?"
[2] We've had politician after politician come
[3] out to our area, tell us what a jewel – an economic
[4] jewel Devens has been with the closure of the fort
[5] and all the revitalization that we see with
[6] industry. Well, it's been a jewel all right, a
[7] jewel for the town of Ayer, a jewel that's becoming
[8] a nightmare. And what we're finding is that the
[9] health and welfare of the people of Ayer is really
[10] being jeopardized because of the economic
[11] opportunity that exists here in Ayer.
[12] There's plenty of white area in that poster
[13] board that I don't see here tonight; and I challenge
[14] the Army. The EPA, and DEP to bring it here
[15] tonight and to bring it to the next public hearing
[16] so that the people of Ayer can see it's a no brainer
[17] that where they want to put the proposed
[18] consolidated landfill site, it shouldn't be there.
[19] Thank you, Mr. Moderator.
[20] **MODERATOR SOBEL:** Thank you.
[21] Just again asking folks to put your names
[22] and addresses down. I think maybe what I'll do here
[23] is use the clipboard and we can pass it back so
[24] everybody can do it while they're waiting. And then

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you all have your – here you go. You get a little exercise on the way.

And each speaker, you have your choice of looking at a hundred tired neighbors or one tired moderator. You can choose which direction to speak.

Go ahead.

JANET KEATING-CONNOLLY: Thank you.

My name is Janet Keating-Connolly, and I am the president of Community Environmental Resources. The address is P.O. Box 209, Ayer, Massachusetts 01432.

Community Environmental Resources is an environmental consulting company that was hired by PACE to provide technical review of proposed remedial decisions at Devens. We have been working with another firm, Disposal Safety, Incorporated, to review documents related to the Army's proposed plan for landfill.

I guess I'll turn around because .

[Inaudible comments from audience]

JANET KEATING-CONNOLLY: We reviewed the proposed plan, the Landfill Remediation Feasability Study prepared by ABB Environmental Services, as well as comments in both documents made by the

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Environmental Protection Agency and the Massachusetts DEP. Other documents, including aerial photographs, historical U.S. Geological Survey topographic maps, and working files at the Massachusetts DEP office in Worcester were also reviewed. Our comments are based on this document review, as well as information obtained from discussions with representatives from the Army, EPA, and DEP, and during a series of PACE-sponsored meetings with the residents of Ayer. During these meetings, residents expressed many concerns about the proposed plan.

The Army proposes to consolidate wastes into a new landfill to be constructed next to Shepley's Hill Landfill. The proposed consolidated landfill site is not suitable for the intended purpose because it does not meet the nine evaluation criteria for selecting a remedial alternative under the Superfund remedy process. These nine criteria are No. 1, overall protection of human health and the environment; No. 2, compliance with ARARs – and for the rest of us, that means the laws and regulations; long-term effectiveness and permanence; four, reduction of toxicity, mobility, and volume

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through treatment; short-term effectiveness. Six is implementability. Seven is cost. Eight, State acceptance. Nine, community acceptance. That has definitely not been achieved in this community.

We will be submitting written comments that address all nine criteria on behalf of PACE and all the people of the community impacted by this proposed plan. Tonight, I will focus on the most important of these criteria, overall protection of human health and the environment.

Mr. Moderator, I have just five points.

MODERATOR SOBEL: Okay.

JANET KEATING-CONNOLLY: The proposed consolidated landfill site is not suitable for the intended purpose because the proposed site allegedly contains unremediated waste management units.

There is evidence of a former liquid waste disposal pit in the footprint of the proposed consolidated landfill site. Aerial photographs reviewed by a DEP consultant show a liquid waste disposal pit in the area next to Shepley's Hill landfill. DEP plotted the location of this liquid waste disposal pit onto a figure which clearly shows the pit to be in the area of the proposed

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consolidation landfill. This area was designated as Study Area CD.

In an October 1995 comment letter on the Draft Consolidation Landfill Feasability Study, DEP stated, "MADEP continues to be concerned with the limited number of borings placed on the proposed consolidation site relative to its size, the lack of baseline analytical data relative to site subsurface media, and possible impact from historic lagoons that may have been previously located on site."

No further investigation of this area has been proposed. The Army, EPA, and DEP cannot fail to properly investigate that alleged lagoons prior to construction of the consolidated landfill. To do so would be a violation of RCRA regulations and would clearly be illegal.

A systematic program of soil borings and chemical analysis is required to locate the alleged lagoons. If contamination is found, it must be dealt with properly under RCRA and CERLA regulations before anything else can be done at the proposed consolidation site.

My second point. The Army, EPA, and DEP have no plan for determining if excavated materials

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[1] meet the definition of hazardous waste.
[2] The proposed consolidation landfill is to
[3] be a RCRA subtitle D landfill, that is, a solid
[4] waste landfill rather than a hazardous waste
[5] landfill. The Army still has no definite plan for
[6] testing excavated materials to determine if they are
[7] hazardous. Even construction debris may contain
[8] potentially hazardous material such as lead paint.
[9] How will the Army make this determination? Will
[10] there be an on-site laboratory to make an immediate
[11] determination of whether the wastes are hazardous,
[12] or will an off-site laboratory be used? What is the
[13] turnaround time for the off-site laboratory, and
[14] will this interfere with the excavation schedule?
[15] If hazardous wastes are discovered, what is the
[16] Army's specific plan for disposing of them?
[17] The third point. Hazardous waste will be
[18] placed in the consolidated landfill.
[19] EPA representatives admitted in the
[20] January 3 PACE meeting that although sorting of
[21] nonhazardous and hazardous waste will be done, some
[22] hazardous waste will go into the new landfill.
[23] First, the Army needs to present a detailed
[24] sampling and analysis plan to describe how testing

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[1] of excavated materials for RCRA hazard –
[2] specifically, the Toxicity Characteristic Leaching
[3] Procedure test – will be integrated with the
[4] actual excavation. This test cannot be performed
[5] with field instruments. A laboratory with
[6] specialized equipment is required, and the usual
[7] turnaround time is on the order of weeks.
[8] To avoid delays in excavation schedules,
[9] the Army will need to make special arrangements with
[10] the laboratory for fast turnaround TCLP analysis, or
[11] it will have to set up an on-site laboratory. Also,
[12] the Army must have a contingency plan for dealing
[13] with any hazardous wastes they discover.
[14] Ultimately, PACE does not support building
[15] a hazardous waste landfill on top of the drinking
[16] water aquifer that supplies the Devens wellfield and
[17] the town of Ayer's Grove Pond wells. However,
[18] should the current proposal succeed, the
[19] consolidated landfill should meet the requirements
[20] for hazardous waster disposal since hazardous waster
[21] no doubt will be disposed of in the new landfill.
[22] Contrary to requirements for hazardous waster
[23] landfill design, the conceptual design of the
[24] landfill presented by the Army does not include the

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[1] double liner or a leak detection system that are
[2] critical to protecting human health and the
[3] environment.
[4] **MODERATOR SOBEL:** Janet?
[5] **JANET KEATING-CONNOLLY:** Yes?
[6] **MODERATOR SOBEL:** You've gone about eight
[7] minutes.
[8] **JANET KEATING-CONNOLLY:** I have two.
[9] **MODERATOR SOBEL:** Two short ones? Okay.
[10] And then we're going to revise our rules.
[11] **JANET KEATING-CONNOLLY:** I have two more
[12] short points.
[13] The proposed consolidated landfill sits in
[14] the high transmissivity zone in the underlying
[15] surface aquifer. Any leaks from the proposed
[16] landfill will quickly reach Plow Shop and Grove
[17] Ponds.
[18] Finally, the consolidated landfill does not
[19] eliminate potential risks to health. It just
[20] concentrates the risks at one location.
[21] The Feasability states that, quote, moving
[22] the landfill debris to a separate consolidation
[23] facility would transfer the risk of potential
[24] release to another location, closed quote.

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[1] Ayer is host to many hazardous waste sites,
[2] as DEP has pointed out in public meetings. Others,
[3] while not in Ayer boundaries, about the town line.
[4] The Army, EPA, and DEP should calculate the total
[5] cumulative health risks posed by the many hazardous
[6] waste sites in and around the town of Ayer.
[7] Further, the additional risk posed by the
[8] consolidated landfill should be evaluated relative
[9] to the baseline risks from all sites.
[10] Thank you.
[11] **MODERATOR SOBEL:** Thank you, Janet.
[12] Again, the reason for the time limit is not
[13] because the comments aren't good. In fact, the
[14] comments have all been excellent in my view. But we
[15] just want to be fair and give everyone an
[16] opportunity to make their comments as well.
[17] So what I'm going to do as we go forward
[18] from this point forward is when you reach a
[19] three-minute point, approximately, I'll give you a
[20] warning and give you another minute or so to finish
[21] up.
[22] And let me ask that if you have really long
[23] comments, perhaps you can try and break them into
[24] two parts and offer one part initially and save the

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second part for after other people have a chance. We just want to be fair to everyone.

Okay. Next.

LESLIE LUCHONOK: My name is Leslie Luchonok. I work for the Massachusetts Department of Environmental Management. I'm director of the ACEC Program.

As the U.S. Army is aware, the former South Post is located within the Central Nashua River Valley Area of Critical Environmental Concern – or ACEC – designated by the Commonwealth's Secretary of Environmental Affairs, Trudy Cox, January 29, 1996. The Department of Environmental Management – or DEM – administers the ACEC Program or behalf of Secretary Cox.

We would like to remind the Army, the former South Post is located within the ACEC and to provide brief oral testimony this evening regarding cleanup actions that are proposed for those sites withing the ACEC.

DEM agrees with the State Department of Environmental Protection that as much material as possible should be removed from Sites SA 13 and AOC 41. DEM strongly supports further testing at

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these sites supervised by the Department of Environmental Protection and the U.S. Environmental Protection Agency to determine if further action is required. If further testing shows that surface removal is not adequate to remove all contaminants, DEM urges complete removal of all contaminants from all the sites within the ACEC. DEM will submit more detailed written comments to the U.S. Army regarding this matter by the close of the public comments period.

Thank You.

MODERATOR SOBEL: Thank you, Leslie. Jim?

JAMES KREIDLER: Thank you.

Good evening, everybody. My name is James Kreidler, and I'm the town administrator for the Town of Ayer. And I'm speaking before you this evening to present the official positions on this matter of the Ayer Board of Selectmen.

And I'd like to begin my comments by acknowledging all the hard work and time and expense that have been dedicated to the subject matter. The Army, DEP, EPA, the RAB, and PACE, to name a few, all deserve recognition for their efforts.

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Next, I must state the Ayer Board of Selectmen's wholeheartedly – that the Ayer Board of Selectmen wholeheartedly supports the efforts by all involved to address human health and the environmental risks that these various landfills pose to all of us.

The official position of the Ayer Board of Selectmen, however, is not in favor of the Army's proposed plan this evening. In an attempt to cover all of our bases, we've been working very closely with the group known as PACE, People of Ayer Concerned for the Environment; and we have decided that they would come to the table this evening prepared to comment on the environmental issues, the technical things, which you've heard; and we would come this evening prepared to talk about some of the less technical things.

There are three comments that I'll be making in my statement this evening regarding the Army's proposed plan. One comment is site specific. One comment is process specific. And the final is a proposed alternate course of action that hasn't been considered.

The site specific comment. The first point

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I'd like to address is specific to the proposed site located adjacent to the existing Shepley Hill Landfill which is adjacent to Plow Shop Pond in the town of Ayer.

As you may be aware, in 1994, there was an archeological study done by Public Archeological Labs out of Oawtucket, Rhode Island. They looked at SA 6 specifically and determined that some of the material in that landfill dated back to the 1850s; and, accordingly, they determined that it was a significant archeological site. And, accordingly, the Army has decided it's not going to – it's not going to work on that site.

And one of the curious points that the Town of Ayer has is was a similar archeological site study done on the proposed location? In some of the Army's documentation, we have found that some of the material found in Shepley Hill area dates back to that same period of time, spent munitions casings and glassware from the 1850s. If it's archeologically significant in SA 6, should it not also be archeologically significant at Shepley's?

That would be one point, and we'd be very interested to have the Army detail to us if – give

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us details as to whether or not a site study has been done. If not, why?

The next comment is process specific. The second comments I have this evening centers on the process by which this site was selected

Over the course of the last several months, we've all attended numerous meetings on this issue. In many, if not all, of these meetings, when the subject of site selection was brought up, we were informed that a, quote, exhaustive year-long siting study, unquote, had been undertaken for the purpose of a location site for the consolidation landfill. On several of these occasions, the Town of Ayer pushed further, inquiring about the study. Each time, we asked for copies of the study in order to do our own evaluation of the site selection process; and we were told we could have a copy, but we were never provided one. It was not until approximately three weeks ago while I was in the BRAC library that we realized why.

When I was in the library, I asked Jim Chambers from the BRAC office for a copy of the often-referenced siting study for the consolidation landfill. He responded that such a document didn't

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really exist. He went on to state that the Army and the regulators had never done a siting study that was specific seeking a suitable location for a consolidated landfill. But that instead, the Army and the regulators dusted off an earlier study that had been done to site a soil remediation facility on Devens; and they used that. This differs greatly from what we had been told.

There are some people who believe that the Army and the regulators may have lied to us about this. I don't believe that they lied, but I feel it's fair to say that the words and comments were at best misleading and less than completely accurate.

Now, we believe the use of this report as a basis for site selection for the consolidation landfill cell presents a problem.

First, the soil siting facility analyzes sites for suitability for soil remediation, not a consolidated landfill cell. The criteria that were used for this soil siting study are not all the same as those used for the siting of the consolidated landfill cell. In fact, and more importantly, some of the considerations that were used to rule out certain sites are considerations that are specific

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to the soil facility and not at all relevant to the siting of the consolidated landfill.

For example, sites were rated more favorably the closer they were located to the soil that was being excavated; and some sites were rated unfavorable because they were not in close proximity to the soil at all.

Further, and specifically, a site on South Post was reviewed and found unfavorable because the soil may have been deemed a hazardous substance and to get it to South Post may have required manifesting to travel over Route 2.

These are just some of the examples that illustrate why we believe – why we believe that the use of this report was inappropriate for the purpose of siting a consolidated landfill cell.

MODERATOR SOBEL: Jim, you're over the time frame. Do you have a little bit more to go?

JAMES KREIDLER: Actually, we have three selectmen so I can have three times three minutes?

MODERATOR SOBEL: If you've got a lot more, maybe you can break it up and come back and finish.

JAMES KREIDLER: I'll finish this point, and then I'll come back.

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MODERATOR SOBEL: Okay.

LAURA BRIDGES: Mr. Moderator, the Army wasn't held to three minutes per person. We have prepared long and hard for this public meeting, and we were never told about this limit. And as far as we know, this is our only opportunity to speak. So I think that should be stated.

MODERATOR SOBEL: Well, it's not your only opportunity to speak. And as I've tried to explain, this is really just an effort to try and be evenhanded so that everybody has an opportunity to make their points tonight.

AUDIENCE MEMBER: Maybe we should have a show of hands on who would object and we can try to finish –

AUDIENCE MEMBER: I'll give up my three minutes.

AUDIENCE MEMBER: I'll give up my three minutes.

JAMES CHAMBERS: Excuse me. I must say if people are going to cry out, you must announce your name. This is a public hearing –

MODERATOR SOBEL: That would have been Senator Durand and Representative Hargraves.

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[1] **JAMES CHAMBERS:** If you choose to do that,
[2] please announce your name so we can help the
[3] stenographer.
[4] **MODERATOR SOBEL:** Thanks, Jim.
[5] Okay. Hold on, folks. Let me just offer a
[6] proposal. Perhaps the – the audience as a whole is
[7] not concerned about time limits here; and if you
[8] like, we can just allow people to speak for as long
[9] as they wish. Would you like that?
[10] (Applause.)
[11] **MODERATOR SOBEL:** Is there any objections to
[12] that?
[13] **AUDIENCE MEMBER:** No.
[14] **MODERATOR SOBEL:** Go for it, Jim.
[15] **JAMES KREIDLER:** Thank you.
[16] Where was I? I was trying to read fast.
[17] **MODERATOR SOBEL:** Now you can slow down.
[18] We'll ask you all to just keep in mind that
[19] there are a number of other folks waiting.
[20] **JAMES KREIDLER:** To continue, these are
[21] just some of the examples that illustrate why we
[22] believe the use of this soils facility siting report
[23] was inappropriate for the purpose of siting a
[24] consolidated landfill cell. The Army and the

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[1] regulators have relied on this report to select a
[2] location for the consolidated cell. They felt it
[3] was appropriate and applicable, but we disagree.
[4] What's curious about all of this is that
[5] the Army and the regulators admit that they used
[6] this report as a basis for selecting the Shepley
[7] site. All the while, the report found that the
[8] Shepley site was unacceptable for reasons that are
[9] equally applicable to a soil facility or a
[10] consolidated waste facility.
[11] In its recommendations, the report
[12] states – and I quote – the Shepley Hill Landfill
[13] area is not preferred due to its location in the
[14] default Zone II radius of the Fort Devens Grove Pond
[15] wellfield. Potential future remedial activities for
[16] Plow Shop Pond and Shepley's Hill Landfill could
[17] also adversely impact the facility if it were
[18] located at the Shepley Hill Landfill area.
[19] We would like to know why we were misled
[20] the way we were, why you believe that the soil
[21] facility siting study is appropriate for this
[22] project, and why you have disregarded the study's
[23] concluded recommendation against siting this
[24] facility at the Shepley site.

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[1] My final point of my three points is to
[2] present an option that hasn't been – an option we
[3] believe that hasn't been pursued. And I'd like to
[4] start by saying we're all very well aware this
[5] evening having heard the nine criteria against which
[6] this proposed plan is measured. We're all further
[7] aware that some, if not many, of the people in this
[8] room seriously doubt whether the Army's proposed
[9] plan tonight meets those criteria. One thing that
[10] is becoming clear this evening, however, is that the
[11] proposed plan does not seem to have public
[12] acceptance. It's in that light that I offer this
[13] final comment.
[14] My final comment this evening centers on
[15] our belief that there is an option available to the
[16] Army, an option that has not been considered in this
[17] plan which meets every last one of the criteria.
[18] I'd like to spend a minute detailing that option for
[19] you right now.
[20] Over the course of the past several months,
[21] we have asked you why this material can't just be
[22] hauled away. Once you have it out of the ground and
[23] in a truck, why can't you just keep going with it?
[24] This line of questioning was met with a

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[1] variety of responses meant to illustrate that this
[2] option wasn't feasible. These responses ranged from
[3] the Army and the regulators telling us that the
[4] matter – that as a matter of either Superfund law,
[5] practice, or policy, that the waste needed to be
[6] kept on site to the response – to the other
[7] response that it would just be too costly to dispose
[8] of the waste off site.
[9] We have since learned from the Army and the
[10] regulators that there are no laws, rules,
[11] regulations, or even policies that mandate the waste
[12] be kept on the Devens site. In fact, as recently as
[13] yesterday, regulators at BRAC – regulators and BRAC
[14] officials told me that it's quite acceptable to
[15] pursue an option that uses off-site disposal as its
[16] end.
[17] And we heard a little bit about that
[18] earlier, and I'd like to just formally put my
[19] question from the question and answer series on
[20] record as a question to be responded to for the
[21] public hearing to be held in Ayer.
[22] What research has been done on bringing
[23] this stuff off site? It was referred to earlier by
[24] Jim Byrne from EPA, and I'd just like to know if

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[1] that detailed information could be provided for us.
[2] Now, as to the question of cost, we've been
[3] told on numerous occasions that the cost to dispose
[4] of the waste off site would double the price tag for
[5] this proposed plan to approximately $34 million and
[6] that that would be prohibitive.
[7] When we began our search for detailed
[8] breakdown of this statement, we found that one did
[9] not exist. In fact, a thorough reading of the
[10] record of this subject will show that the option of
[11] off-site disposal was not analyzed in any detail.
[12] In fact, in the 1995 Draft Consolidation Landfill
[13] Siting Feasability Study, a three-inch document,
[14] only a scant one and a half pages were dedicated to
[15] the concept of off-site disposal. The conclusion
[16] was that off-site disposal met all of the response
[17] objectives. All of the nine points were met with
[18] the exception of cost effectiveness in the Army's
[19] analysis.
[20] And, again, that is a page-and-a-half
[21] analysis in a three-and-a-half-inch thick document.
[22] So, again, we'd be interested to know where those
[23] documents are that their anaylsis comes from. So,
[24] therefore, this was found to be an acceptable and

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[1] appropriate response action; but it was just too
[2] costly.
[3] We agree that a plan consisting of off-site
[4] disposal meets all of the response objectives, but
[5] we also believe that off-site disposal is a
[6] cost-effective option. We did our own analysis with
[7] our own engineers on the cost effectiveness of this
[8] proposal, and allow me to elaborate.
[9] In brief, in an effort of being fair and
[10] accurate, to compare apples to apples if you will,
[11] we have relied upon the assumptions, premises, and
[12] calculations that appear in the Army's own
[13] documents. We do not put this analysis forth as a
[14] definitive and complete look at the option; but we
[15] do strongly believe, as do our engineers, that it
[16] serves as a very strong foundation which proves that
[17] further conclusion of this disposal off site is
[18] warranted.
[19] The Army's proposed plan calls for
[20] excavating material from three landfill and
[21] consolidating it into a new landfill adjacent to
[22] Shepley Hill and doing minor remediation at other
[23] sites. The Army has estimated a budget for this
[24] project in the amount of $17.3 million. This

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[1] estimated budget is broken out in a great deal of
[2] detail, and it is from that detailed budget document
[3] that we began our work.
[4] We propose a similar plan. Our plan
[5] differs only from the Army's in that our plan has
[6] the waste not being consolidated and placed in the
[7] new cell in the town of Ayer, but, rather, having
[8] this waste hauled off site.
[9] If you take the $17.3 million plan that the
[10] Army is proposing and you subtract from it any of
[11] the expenses associated with designing, engineering,
[12] building, operating, and maintaining a new landfill,
[13] and you subtract from it any of the expense involved
[14] in hauling the waste from the various sites on
[15] Devens and then dumping it, spreading it, and
[16] compacting it at the new site, and after taking into
[17] account contingency fees, you're left with a
[18] stripped-down project that covers excavating the
[19] material from the sites, loading it into trucks,
[20] then backfilling and doing reclamation work and
[21] long-term monitoring at the affected sites.
[22] So, now, we've got everything up out of the
[23] ground in trucks; and the sites are remediated. We
[24] say take it out of town at that point. This

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[1] stripped-down version of the project using the
[2] Army's own estimated budget numbers would only
[3] require approximately $5.2 million.
[4] Now, as we're all well aware, the Army has
[5] proposed a plan and has it on the table for 17.3
[6] million. If you take the Army's 17.3 and you fun
[7] the stripped-down version of the plan for 5.2, that
[8] leaves $12.1 million on the table to dispose of the
[9] waster. Our engineers have worked with us to prepare
[10] costs of disposing the amount of waste discussed in
[11] the plan to an approved off-site facility. The
[12] results of this query proved to be interesting.
[13] The Army's proposed plan states that
[14] there's approximately 232 cubic yards of waste
[15] material to be removed. They state it's a
[16] combination of household waste, tree stumps, soils,
[17] and construction debris. For the sake of our
[18] argument, we assume that all of waste is
[19] construction debris, which is typically more
[20] expensive to dispose of.
[21] We then took the 232 cubic yards of
[22] material and went shopping for an approved off-site
[23] facility. With the assistance of engineers, we
[24] located a viable off-site disposal facility in

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[1] another state that could, A, handle this amount of
[2] waste, and, B, had the vehicles to handle this
[3] project in a time efficient manner.
[4] Now, as we stated earlier, we currently
[5] have $12.1 million on the table to dispose of this
[6] material. After some discussion and negotiation, we
[7] received a proposal from this facility. They have
[8] stated that they would haul and dispose of this
[9] waster for $80 a ton. When you convert 232 cubic
[10] yards of waste into tons, you get about 145,000
[11] tons. In the final analysis, this means we have
[12] 12.1 million to spend and a commitment to haul away
[13] and dispose of this material in an out-of-state
[14] approved facility for a grand total of $11.6 million
[15] or a total cost savings of a half a million
[16] dollars.
[17] AUDIENCE MEMBER: Let's do it.
[18] JAMES KREIDLER: Now, again, I'm not an
[19] engineer. I'm not an environmental scientist. I'm
[20] really not even that good with numbers. But this is
[21] kind of simple stuff, and I think it just proves the
[22] point that it needs to be looked at in more detail.
[23] A quick review of what we have here shows a
[24] plan that meets all of the requirements. The Army

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[1] agrees. It completely removes the waste; and it
[2] saves the Army, and, thus, the taxpayers, a half a
[3] million.
[4] This option sounds look a winner to us, and
[5] we ask that you, the Army, do not move forward on
[6] your proposed plan and that instead you take the
[7] time to review our plan with us and realize that it
[8] is the best and only truly appropriate option
[9] available.
[10] Thank you very much for your time and
[11] consideration on this matter.
[12] **MODERATOR SOBEL:** Thanks, Jim.
[13] Next, this gentleman in the plaid; and then
[14] it comes down to Coleen, and we'll go back from
[15] there. I think I've got the right order.
[16] **GRAHAM GRALLERT:** My name is Graham
[17] Grallert. I'm a resident of Ayer.
[18] **MODERATOR SOBEL:** Say your name again,
[19] Graham
[20] **GRAHAM GRALLERT:** Graham Grallert.
[21] I'm not quite as organized as everyone
[22] else, but I just wanted to mention a couple of
[23] things.
[24] The poster board that was mentioned earlier

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[1] that is not here tonight also showed three other
[2] areas of contamination. All three of those made up
[3] Shepley's Hill. It was decided not to deal with
[4] Shepley's Hill with all the others because of two
[5] things, cost, mainly, I believe, and also the fact
[6] that it was capped and they – we were told that it
[7] would stop leachate over a period of five years.
[8] Tests show that it has not stopped. In fact, it's
[9] leveled off at a level much higher than what is
[10] acceptable.
[11] There are aerial photos showing Shepley's
[12] Hill years ago showing portions of the dump site in
[13] wetlands. Let's get rid of that, also, all of it,
[14] out of this town. How can we add more to a site
[15] that it already tainted?
[16] Thank you.
[17] **MODERATOR SOBEL:** Thanks, Graham.
[18] Coleen?
[19] **COLEEN NORSTROM:** All I want to do is
[20] introduce three letters to the –
[21] **MODERATOR SOBEL:** Would you state your full
[22] name first.
[23] **COLEEN NORSTROM:** Coleen Norstrom.
[24] **MODERATOR SOBEL:** Thank you.

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[1] **COLEEN NORSTROM:** My home address? 55
[2] Shirley Street, Ayer.
[3] **MODERATOR SOBEL:** Thank you.
[4] **COLEEN NORSTROM:** Introduce three letters
[5] that have been sent to the Secretary of the Army,
[6] one by the Ayer Board of Selectmen, one by the –
[7] it's the Congressional delegation, and the third one
[8] is the Joint Board of Selectmen.
[9] Do you need the dates?
[10] Also, we have a December 18, 1997, letter
[11] from the majority of the Board of Selectmen in Ayer
[12] to Governor Cellucci.
[13] Any my second point is that I want to make
[14] sure that it's public record that the Town of Ayer
[15] has requested a public hearing during the comment
[16] period in time so that we can still make a comment.
[17] Thank you.
[18] **MODERATOR SOBEL:** Great. Thank you.
[19] Sir?
[20] **DAVID BODURSHA:** Hello. I'm David
[21] Bodursha. I'm a resident here of Ayer.
[22] My statement is this landfill as they're
[23] proposing it as consolidation will be located fully
[24] or partially within a high-yield aquifer, or the

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[1] best of a worst case, fully within a medium- or
[2] low-yield aquifer. Any failure of the landfill no
[3] matter how quickly resolved has the possibility of
[4] contaminating the aquifer. In discussions that I
[5] have been part of over the last couple of months, there
[6] has been – no one's been able to make this
[7] statement that no possibility of a failure at the
[8] proposed landfill could happen.
[9] The reason that a few of these sites are
[10] being moved is to get them away from a water source
[11] or away from an aquifer that they presently reside
[12] in. State of the art or not, materials removed from
[13] one aquifer should not be picked up and placed in
[14] yet another aquifer or an extension of the same
[15] aquifer.
[16] If materials from the consolidation cannot
[17] be removed completely from Devens – which I think
[18] is the correct resolution to the problem – then the
[19] new landfill should be located in a remote
[20] location. It should be remote from not only all of
[21] the areas designated for Devens development, but
[22] also removed from all of the surrounding
[23] communities.
[24] If this means that a parcel of land within

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[1] the Devens cannot – cannot be developed because of
[2] a consolidation landfill put there, which is –
[3] you've heard referred to as the white zone – or
[4] outside of the aquifer area on this poster board
[5] that has been talked about, then that's the price
[6] that needs to be paid to assure the present and
[7] future health of the residents of the surrounding
[8] towns and their water.
[9] I believe that the easy route has been
[10] taken by placing this new landfill next to an
[11] existing landfill which is still showing problems
[12] with the leaching.
[13] I'm not going to read this whole thing.
[14] I have a few requests. One, that there
[15] will be another public hearing before the end of the
[16] public period so that additional comments can be
[17] entered into the record.
[18] I would also like to see a public list that
[19] summarizes the criteria studied for the sites with a
[20] positive or negative associated with each criteria.
[21] I'd like to see a copy of the cost study
[22] that was done for the local consolidation and for
[23] the total removal of the materials from the Devens
[24] area.

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[1] I'd also like to know – have published to
[2] anybody that's interested how the hazardous material
[3] would be separated from materials that will be
[4] placed into the new landfill site, a detailed
[5] diagram made available of the new construction, not
[6] the – presently, there is a diagram that shows it
[7] but does not show the double liners, does not show
[8] what I understand is the PCB or PVC, whatever,
[9] tubing to pull off the leachate, a trucking plan
[10] that – for the removal of the hazardous materials
[11] including any leachate collected from the new
[12] landfill site, and also a plan that details how
[13] access of Plow Shop Pond will be acquired, when that
[14] Superfund site cleanup is going to happen. In all
[15] the documentation that I've seen, I don't see how
[16] they're going to be able to truck in and out
[17] materials during that Superfund cleanup site.
[18] And, lastly, presently, at the Shepley's
[19] landfill, there continues to be leachate coming from
[20] the landfill into Plow Shop Pond and into the
[21] aquifer. If the present cap at Shepley's does not
[22] resolve the continuing problems with the landfill,
[23] how will the placement of this proposed landfill
[24] affect the future cleanup of that?

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[1] Thank you.
[2] **MODERATOR SOBEL:** Thank you, David.
[3] **JAMES CONNOLLY:** I'm Jim Connolly, resident
[4] of Ayer. And I want to apologize in advance for the
[5] probably highly number filled nature of my comments,
[6] but I wanted to get some of this stuff on the
[7] record.
[8] I've been a little bit confused and kind of
[9] a little bit frustrated from time to time with the
[10] lack of some specifics; and I thought I'd provide
[11] some tonight even though I recognize that these
[12] calculations took me about a half an hour, and I
[13] have no doubt at all that Jim could improve upon
[14] them and make them considerably more site specific
[15] than this.
[16] First is regarding the volume of the
[17] landfill. According to the feasability study, the
[18] landfill is going to be 50 feet high, five-zero
[19] feet. Figures other people have stated have ranged
[20] from 30 feet to 60 feet. I used a 50 foot number.
[21] As we heard earlier today, the base of the
[22] landfill is going to occupy approximately 33,000
[23] square yards. The number I used was 32,400 based on
[24] a 180 yards square base which I got off the Army's

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[1] map. Depending on the exact shape of the landfill,
[2] how flat it is on top or how pointed it is on top,
[3] the total volume of that space is going to be
[4] anywhere from 200,000 to 280,000 cubic yards.
[5] Since they have stated their planning
[6] volume for excavation is 232,000 cubic yards, I
[7] conclude that it does not appear that they intend to
[8] be shipping a lot of the material off site. Any
[9] material they do ship off site is apparently
[10] intended to be replaced with the soil that they've
[11] excavated from around the underground storage tank
[12] removal program, which, in fact, is perfectly legal
[13] under the State requirements; but it contains some
[14] quantity of oil and other constituents that might be
[15] found in waste oil, gasoline, diesel fuel, whatever
[16] the contents of the original tank were. That's the
[17] first comment.
[18] Second comment. Based on 232,000 cubic
[19] yards excavation volume over 18 to 24 months, if
[20] they were going to excavate over 22 months, 5 days a
[21] week, 50 weeks a year, and they're going to put
[22] everything in a ten-wheeler truck which has about a
[23] 15 cubic yards capacity, they're going to need
[24] between 30 and 50 trucks per day – truckloads per

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[1] day of soil that they're going to move.
[2] If they're going to excavate and test this
[3] soil for the normal parameters, laboratory
[4] turnaround time is a minimum of one day. That's the
[5] best I've ever been able to get, unless you have an
[6] off-site laboratory. If they do a TCLP, the
[7] Toxicity Characteristic Leachate Procedure, that
[8] starts with an 18-hour extraction process. So the
[9] total time is going to take two days.
[10] Clearly, then, they intend to either place
[11] the stuff in the landfill or place the stuff in a
[12] temporary holding area or leave it in the trucks for
[13] a day or two until the results of the test come
[14] back. So that's going to require staging areas,
[15] places to park loaded trucks, and a lot more
[16] trucks.
[17] If they take and put everything in 15-yard
[18] trucks and they take one sample per truck, that's
[19] 16,000 truckloads. My guess – my best guess – and
[20] it is a guess – for how much it's going to cost per
[21] truck is $800. This is based on analyses of the
[22] contaminants of TPH, polycyclic aromatic
[23] hydrocarbons, pesticides, PCBs, and priority
[24] pollutant 13 metals, which are the contaminants that

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[1] have been detected in the landfills at the site.
[2] $800 is a fairly good price for that. You
[3] may be able to do better, especially if you offer
[4] somebody $13 million worth of lab work over two
[5] years. No doubt, you know, you can do more precise
[6] numbers than that.
[7] Folks, that's the end of my numbers for
[8] everybody; and I apologize for that.
[9] The other question is about the hazardous
[10] waste design of the landfill. It's been designed
[11] with a flat base. It's been designed with a single
[12] plastic liner with clay underneath.
[13] If the liner ever fails or if there's
[14] enough leachate accumulated to overload the design
[15] of – the design capacity of the collection system,
[16] the leachate will either break out through the cap,
[17] or if it fails, it will go through the bottom into
[18] the aquifer.
[19] The plan – any plan that the Army has has
[20] to clearly address that, how they're going to detect
[21] that, assess how fast it's going to be detected, and
[22] what they're going to do about it in terms of leak
[23] detection and leak repair if this ever happens. And
[24] this detail also has not yet been forthcoming, and I

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[1] would like to see the answers to those questions.
[2] Thank you.
[3] **MODERATOR SOBEL:** Thanks, Jim.
[4] **LUCY WALLACE:** I feel like this is the
[5] great parade or something.
[6] I'm Lucy Wallace. I'm a resident of the
[7] town of Harvard, and I'm a member of the Devens Open
[8] Space Task Force.
[9] I am not speaking tonight to the proposed
[10] location of the consolidated landfill. I think a
[11] lot of good points have been brought up, and I'm not
[12] going to add anything to that. But I would like to
[13] speak to the proposed plan for dealing with the
[14] seven existing landfills.
[15] The Nashua River and its underlying aquifer
[16] are significant, if not the most significant,
[17] natural resources in the region. They support
[18] existing and future public water supplies. The
[19] wetlands associated with the river provide flood
[20] control. The river network provides important
[21] wildlife habitat for many species, some of which are
[22] federally or state threatened or endangered. The
[23] river is a recreational resource.
[24] The Army's activities on Fort Devens have

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[1] resulted in the seven landfill sites being
[2] considered tonight in the Army's proposed plan.
[3] With the exception of SA 6, the 19th Century farm
[4] site on the South Post, these sites are located
[5] either within the Nashua River's flood plain, in
[6] wetlands which drain into the river, or upgradient
[7] slopes which drain into the river, or in areas which
[8] have the potential to contaminate the aquifer and
[9] public water supplies.
[10] In short, six of the seven landfills all
[11] presently impact a significant regional resource.
[12] My comments are directed to the proposed treatment
[13] of these six landfills.
[14] The Army's rationale for leaving SA 12 and
[15] AOC 41 on the South Post essentially intact with
[16] minimal surface cleanup by Army personnel is the
[17] lack of human activity on the site, which is now
[18] part of the reserve training area and will become
[19] part of an expanded Oxbow National Wildlife Refuge.
[20] The fact that contaminants beneath the surface will
[21] continue to impact a regional water resource has not
[22] been considered.
[23] Let me remind you that water flows. It
[24] moves. It does not stay put. Contaminants in its

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[1] path will likewise move.
[2] The Army's rationale for leaving AOC 11
[3] essentially intact, again minimal surface cleanup,
[4] is the same, lack of human activity on the site.
[5] It's in a flood plain. By federal, state, and local
[6] law, there can be no building in a flood plain.
[7] Again, the contaminants left below the
[8] surface will be subject to inundation of floodwaters
[9] and rising groundwater; and they will travel
[10] downstream continuing to pollute the river and
[11] downstream water supplies.
[12] And as if to add insult to injury, AOC 11
[13] was created after the passage of the Clean Water Act
[14] which prohibits fill of wetlands. The Army, a
[15] federal agency, simply chose to ignore the federal
[16] law; and now the Army is choosing to ignore
[17] enforcement of federal requirements under this law
[18] which require not only cleanup and restoration of
[19] the damaged wetlands, but in some instances require
[20] payment of a fine.
[21] What do you see suppose G.E. would say
[22] about this double standard?
[23] And I know you know, but does the general
[24] public realize that it is the Army Corp. of

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[1] Engineers, a branch of the U.S. Army, that oversees
[2] and enforces the Clean Water Act?
[3] When I first got involved in the landfill
[4] cleanup and consolidation matter last summer, it was
[5] at the request of the Mass. DEP and EPA. At that
[6] point, the Army was insisting on only capping in
[7] place the seven landfills. No removal, no
[8] excavation, no consolidation, no proper disposal.
[9] Mass. DEP and EPA wanted all seven sites removed,
[10] excavated, and consolidated. Through the efforts of
[11] many concerned citizens and organizations, the
[12] Army's plan was modified to what we have tonight.
[13] But why the incomplete cleanup? Apparently
[14] cost. And what is the difference in cost if you
[15] accept their estimates? The proposed plan,
[16] $17.3 million, cleanup of six of the seven sites,
[17] the six sites that impact the water resources, was
[18] not even given, not even considered.
[19] The Army was willing to excavate and
[20] consolidate all of the sites, including the farm
[21] site, except for AOC 11, the one in the flood plain
[22] in violation of the Clean Water Act at a total cost
[23] of $18.1 million. That's Alternative 8. Excavation
[24] and consolidation of all seven sites, $20.2 million,

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[1] Alternative 9. Three million dollars more to do the
[2] job right. Is protection of this incredible
[3] resource not worth it?
[4] We have spent decades and millions of
[5] dollars and untold volunteer hours cleaning up the
[6] Nashua River. It is an international success
[7] story. The Army should not be allowed to walk away
[8] from Devens with three landfills remaining in the
[9] wetlands or flood plain of the Nashua. In addition
[10] to the removal and consolidation of the three sites
[11] they propose, the Army must remove and consolidate
[12] SA 12 and AOC 11 and 41; and all the impacted
[13] wetlands must be restored.
[14] As a final note, I would hope the
[15] controversy surrounding the siting of the
[16] consolidated landfill would not be a fact – a
[17] limited factor in the Army's decision to excavate
[18] and consolidate these six landfills. I urge the
[19] Army to agree to, or, if need be, the EPA to
[20] require, the proper treatment of these landfills,
[21] excavation and removal of the debris, removal of the
[22] contaminants, restoration of the wetlands, and
[23] proper disposal of everything.
[24] Thank you.

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[1] **MODERATOR SOBEL:** Thank you, Lucy.
[2] **ALEXANDRA TURNER:** I'm Alexandra Turner
[3] from 620 Main Street in Lancaster. I'm a selectman
[4] from Lancaster.
[5] The Lancaster Board of Selectmen has voted
[6] unanimously to disapprove the Army's current
[7] proposed landfill consolidation plan.
[8] During tonight's presentation, the primary
[9] criteria cited for approval was to protect human
[10] health. We feel that the current plan jeopardizes
[11] Lancaster's health as well as that of our
[12] neighbors. The current plan leaves contaminants in
[13] environmentally sensitive wetlands over an aquifer
[14] and upstream of miles of sensitive food plains. We
[15] request the Army honor the first mandate of cleanup
[16] and protect human health and consider complete
[17] excavation.
[18] **MODERATOR SOBEL:** Thanks, Alex.
[19] Where is the sign-up sheet? I just hope we
[20] haven't lost it.
[21] **AUDIENCE MEMBER:** It's back there.
[22] **MODERATOR SOBEL:** It's back there? Okay.
[23] Just as long as, Dale, you're hanging onto it. Try
[24] to make sure that everyone gets their names down.

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[1] Thank you.
[2] **LAURA BRIDGES:** Laura Bridges from Ayer.
[3] And I'm already on the sign-up sheet.
[4] I want to thank Lucy Wallace of Harvard for
[5] her perspective. Very valuable stuff. And
[6] Lancaster, also, for their support.
[7] Graham Grallert spoke earlier tonight and
[8] wanted to be sure – he had to leave because his
[9] wife is sick – to emphasize one thing. And that is
[10] that he said the leachate from the existing
[11] Shepley's Hill Landfill is greater presently than
[12] leachate from all of the other landfills combined.
[13] And I told him I'd tell you that.
[14] And I also want to say what I said earlier
[15] just to insert my questions for the public record.
[16] Number one, that the first five-year review
[17] testing is imminent, I guess due in January. And I
[18] guess it's the first time it's been done since the
[19] final sealing of the Shepley Hill Landfill. What
[20] tests will be done and why, and how will we get the
[21] results?
[22] And then, also, tonight a representative
[23] from the Agency for Toxic Substances and Disease
[24] Registry is here. I have learned that this agency

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[1] plans to study this area in 1998. Specifically,
[2] they look at things that refer directly to human
[3] health; and they are linked to the CDC in Atlanta.
[4] Why are we being asked to accept a new
[5] landfill when we don't have the data from these
[6] studies available to us?
[7] Thank you.
[8] **MODERATOR SOBEL:** Thank you, Laura.
[9] Sir?
[10] **FRANK MAXANT:** My name is Frank Maxant. I
[11] live in Ayer. If my voice songs hoarse, it's
[12] because I've been singing all night preparing a
[13] concert for which I have publicity for anyone that's
[14] interested.
[15] **MODERATOR SOBEL:** Tell us what your name is
[16] again, please.
[17] **FRANK MAXANT:** Frank Maxant, M-a-x-a-n-t.
[18] We've been told all throughout this process
[19] that a very key element of the Superfund Act is
[20] public participation. Now, someone who's more
[21] familiar with the Act than I can correct me if wrong
[22] in assuming that the purpose of having the public
[23] participate is to give the public information –
[24] good, solid, complete information so that the public

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[1] can then make a valid assessment of whatever it is
[2] being proposed and decide whether it seems good or
[3] not.
[4] I've been participating in this fairly
[5] extensively. I've studies those picture boards.
[6] I've seen the material that's been put out. And up
[7] until Tuesday night, my impression from all this
[8] information that they've been giving us as part of
[9] our participation in the program was that basically
[10] what was in these landfills that we're talking about
[11] was cellulose, wood of various sorts, lime, maybe
[12] plaster and so on, and then some iron in the steel
[13] and whatnot that was part of the construction
[14] debris, and then some incidental stuff that was kind
[15] of noxious; and they were going to get rid of that.
[16] which led me up until Tuesday night to say, well,
[17] why not just leave it where it is and let nature
[18] handle it the way nature handles cellulose and lime
[19] and iron and turn it into good, fertile topsoil.
[20] Well, Tuesday night, because one of our
[21] public employees made available to us some of his
[22] personal notes, I've learned that this information
[23] that I received at least is totally misinformative,
[24] that there is a lot of noxious stuff there. So that

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[1] this public participation process, if it is intended
[2] to be by the Act the way I presume it's intended to
[3] be, has been perverted by the people who have been
[4] operating it. They haven't been informing us at
[5] all. They've been misinforming us.
[6] And, tonight, we hear different things
[7] relating to that same thing, the Ayer Board of
[8] Selectmen being told over and over again about a
[9] study, the figures showing that perhaps they're
[10] planning to put some more stuff in there than
[11] perhaps they're actually telling us.
[12] So I think that this whole thing should
[13] right now be declared invalid, come right to a dead
[14] stop, start all over again with a completely
[15] different attitude on the part of the people giving
[16] us the information, the Army and whoever else is
[17] involved; and let's get started with an honest
[18] process with public participation that really can
[19] mean something because of being told the facts, not
[20] a bunch of spin-doctored stuff to drive us to the
[21] opinion they want us to have.
[22] **MODERATOR SOBEL:** Thanks for your comment,
[23] Frank.
[24] Sir, you're next, and then this lady. Go

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[1] ahead.
[2] **JAMES NEHRING:** Thanks.
[3] Jim Nehring. I'm an employee of the Parker
[4] Charter School located on Devens, Seven Bean
[5] Street.
[6] I'm thinking about the 10,000 dump trucks
[7] that are going to be rumbling past our school door
[8] when we relocate to the Devens Elementary School
[9] next year and the dumping that will take place
[10] nearby may be upwind from the school releasing
[11] airborne dust of I don't know what – what
[12] questionable nature it may be, production of noise,
[13] production of automotive exhaust. And so I'd like
[14] to introduce several questions into the record that
[15] I'd like to have a response to.
[16] One is what are the nuisance and health
[17] risk factors associated with the process of
[18] establishing such a dump in proximity to a populated
[19] area, specifically a school?
[20] Secondly, which of those nuisance and
[21] health risk factors may apply to this site and
[22] Devens Elementary School located over the hill?
[23] And then, thirdly, what are the nuisance
[24] and health risk factors associated with the ongoing

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[1] presence of such a dump in close proximity to a
[2] school?
[3] Thank you.
[4] **MODERATOR SOBEL:** Thanks, Jim.
[5] **PAM DiBONA:** My name is Pam DiBona, and I'm
[6] with Community Environmental Resources.
[7] Given the number of data gaps and
[8] misstatements that very eloquent commentors have
[9] raised, I would recommend that EPA and DEP require
[10] the Army to prepare a new proposed plan that
[11] addresses the questions and the gaps raised. At the
[12] very least, they should be required to submit a
[13] supplemental report for community review.
[14] The Army should not proceed to the Record
[15] of Decision phase of the CERCLA process until the
[16] community has been given a chance to review all of
[17] the information and alternatives to their own
[18] satisfaction. To allow the Superfund process to
[19] steamroll forward means to allow the community's
[20] concerns to be flattened.
[21] Thank you.
[22] **MODERATOR SOBEL:** Thank you, Pam.
[23] Are there any other comments at this time?
[24] Please come up, sir.

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[1] And if anyone else would like to comment,
[2] this is – we still have a little bit more time so
[3] we welcome you up.
[4] **RICHARD HATCH:** Good evening. I haven't
[5] heard anybody from the town of Shirley so here's a
[6] person from the town of Shirley, Richard Hatch. I'm
[7] Three Maple Street, Shirley, Mass.
[8] I'm commissioner of the Shirley Water
[9] District, and I'm quite concerned about the
[10] consolidation of this landfill in your town of
[11] Ayer.
[12] I realize that some of the dump material is
[13] going to come from the town of Shirley, and the area
[14] in Shirley is very close to an aquifer. And as you
[15] know, aquifers know no boundaries. The aquifers run
[16] from Shirley into Ayer, from Ayer into Shirley, from
[17] Lancaster, Harvard, all down the Nashua River
[18] basin.
[19] Now, you take a simple thing like say you
[20] have a gallon of – ten gallons of gas in your
[21] house, and you have it – each person on the street
[22] has five gallons of gas. It's no problem in each
[23] area. But when you take all that gas and you bring
[24] it together, you may have 300 or 400 gallons of

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[1] gas. Now you've got a problem, And that's the same
[2] with these landfills. When you take and bring them
[3] all together, now you've got a problem.
[4] And this problem – as people have said
[5] here this evening, if you've got it up and you've
[6] got it in trucks, now you've got it sorted, now take
[7] it someplace that it's really going to be safe, not
[8] next to a water supply. And if – you've got to
[9] find a safe place for it.
[10] As they mentioned tonight, that you didn't
[11] see that aquifer map around; but that aquifer map
[12] tells you a lot about where your groundwater is.
[13] And I'm going to make a comment – a letter
[14] comment; but I just wanted to speak to you people
[15] this evening to let you know that the people of
[16] Shirley are on your side.
[17] Thank you.
[18] **MODERATOR SOBEL:** Thank you, Richard.
[19] Okay. I think we're closing – coming to
[20] the close of our long evening. I want to – hang
[21] with us for just another moment because I think
[22] we're going to have a final comment from Jim in just
[23] a second.
[24] But, personally, I want to thank all of you

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[1] who have stayed this long, and those of you who
[2] aren't here to hear me say this, for your very
[3] thoughtful comments and questions. It's been I
[4] think a very informative and remarkable evening, and
[5] I hope that in the long run it proves to be very
[6] productive.
[7] I also want to Lieutenant Colonel Murdough
[8] and Jim Chambers and the other sponsors of the
[9] evening and the folks from the environmental
[10] agencies not only for their presentations but also
[11] for their recognition of the importance of these
[12] issues to your towns. And that being expressed –
[13] and expanding the time for public comment this
[14] evening and in being open to returning to the
[15] community hopefully with more information that will
[16] address your questions and extending the public
[17] comment period. I think those are very good signs,
[18] and I want to thank them for that.
[19] And I want to say good night to you myself
[20] and then turn for final words over to Jim Chambers.
[21] **JAMES CHAMBERS:** Thank you all for coming
[22] out this evening. Fortunately, we had some good
[23] weather today. We could have had two feet of snow
[24] out there, and then we definitely would have had to

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[1] reschedule this meeting.
[2] But as I mentioned earlier, we have already
[3] extended the written comment period from the 22nd of
[4] January to the 9th of March. And during that time,
[5] we will work with the Town of Ayer to schedule a
[6] second public hearing; and it will be before the 9th
[7] of March so I'm not quite sure what day that will
[8] be. I know you suggested the school. I know
[9] there's a school vacation period in there. I don't
[10] know whether that will be an appropriate week or not
[11] so we'll have to work around that as well.
[12] I'd like to also mention that once we
[13] receive the comments, the Army will provide copies
[14] and transcripts of these comments to the EPA, DEP,
[15] and to the – to be made available in the
[16] information repositories, and also will be provided
[17] specifically to the commentors this evening.
[18] So, please, if you made a comment, please
[19] ensure that you've left your name and address with
[20] us so that we can send those comments to you.
[21] Once the comment period closes, and it's –
[22] and we deem that we can proceed with some version of
[23] the proposed plan, if we do that, then the Army has
[24] 60 days to respond to the comments, provide a draft

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[1] Record of Decision to the EPA; and that would be –
[2] the 8th of May would be that date, 8-May-98. So
[3] that's kind of the process.
[4] Once we provide that to the EPA, then
[5] there's a 30-day selection period that would bring
[6] us to June '98. And then after that, there would be
[7] a – under Superfund law, there's a 15-month window
[8] of opportunity that the Army must begin the remedial
[9] action.
[10] So our hope would be to begin sooner; but,
[11] again, based on your input this evening and the
[12] written comments we also anticipate receiving, we'll
[13] have to further evaluate that.
[14] So, again, we had quite a few participants
[15] this evening. This has been – I know it's one of
[16] the most complicated projects we've worked on.
[17] Certainly, this is the most participation we've had;
[18] and I certainly – speaking for the Army, we
[19] appreciate that. And of behalf of Colonel Murdough
[20] and myself, thank you again for coming out this
[21] evening.
[22] (Whereupon the proceedings were
[23] adjourned at 10:30 p.m.)
[24]

[1] CERTIFICATE
[2] I, William J. Ellis, Registered
[3] Professional Reporter, do hereby certify that the
[4] foregoing transcript, Volume I, is a true and
[5] accurate transcription of my stenographic notes
[6] taken on January 8, 1998.
[7]
[8]
[9]
[10] William J. Ellis
[11] Registered Professional Reporter
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Volume II
Pages 2-1 to 2-108

Continued Public Meeting on Proposed Plan for SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41

U.S. Army Reserve
Forces Training Area
Devens, Massachusetts

MODERATOR: Jonathon Raab

Held at:

Ayer Senior High School
141 Washington Street
Ayer, Massachusetts
Wednesday, February 25, 1998
8:25 p.m.

(William J. Ellis, Registered Professional Reporter)

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PROCEEDINGS

JIM CHAMBERS: We'll now begin the public hearing and question and answer period.

As this is a public hearing, we will record all the comments and responses presented this evening. We have a stenographer here, and please speak clearly so that he may record all your comments and questions.

This is a change in the last meeting when only your comments and questions were recorded. Tonight, the responses from the Army, EPA, and DEP will also be recorded. The transcript and additional written responses will be provided in the Responsiveness Summary. As this is for the record, please announce your name and address prior to making your comment.

We ask that representatives from the Land Bank and the Town of Ayer to begin with their comments.

And I now turn this over to Jonathon Raab who will moderate the public hearing for us. Thank you.

MODERATOR RAAB: We're going to start with Jim Kreidler from the Town of Ayer. Is he still

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here? And then we'll have Bill Burke right after that?

If you want to come up to the podium, you can.

And they'll be talking about their off-site option proposal. Then we'll have a response from the colonel. Then we'll open it up to everybody else.

JAMES KREIDLER: I'd just like to start before I get to my comments and remind the people that spoke during introductory comments that your comments were not recorded as part of the official record. If you have those comments in writing, submit them to the folks at the tables before you leave. That will be one way to get them recorded. Other than that, you can make –

THE REPORTER: Can we get that microphone turned up, please. I can't hear him.

Mr. Kreidler, could you either speak louder; or could we get that microphone turned up?

JAMES KREIDLER: Is that better?

THE REPORTER: Thank you.

JAMES KREIDLER: My name is Jim Kreidler. I'm the town administrator for the Town of Ayer.

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And the address would be One Main Street, Town Hall, Ayer, Massachusetts. And I'd like to welcome everybody here this evening and let you know that I'm speaking before you this evening on behalf of the Ayer Board of Selectmen.

We'd like to start by thanking our governor, state and federal representatives for their support and attendance. And I'd like to thank all of you for coming here this evening.

I'd like to begin our comments by acknowledging all of the hard work, time, and expense that have been dedicated to the subject matter. The Army, the DEP, the EPA, the RAB, PACE, and all of you deserve recognition for your efforts. A special note of appreciation should go to the BRAC office, and to the Army Corp. of Engineers particularly, and specifically to Colonel Murdough.

Colonel Murdough, thank you for your attention over the last several weeks. It's been a pleasure to work with you the last several weeks on this issue in preparation for this evening. Your efforts are appreciated and have not gone unnoticed.

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[1] You're our guests here this evening. And
[2] although I don't wish to suggest that anybody temper
[3] their remarks this evening – we want everybody to
[4] get their questions and concerns out – I would like
[5] to just encourage everybody to handle yourselves in
[6] such a manner that recognizes that these folks are
[7] our guests here in the town of Ayer tonight.
[8] With that, I'd like to state that the Ayer
[9] Board of Selectmen wholeheartedly support the
[10] efforts by all involved to address human health and
[11] the environmental risks that these various landfills
[12] pose to us all. We applaud the work of the Army to
[13] address this issue, but the official position of the
[14] Ayer Board of Selectmen is not in favor of this
[15] proposed plan.
[16] The official position of the Ayer Board of
[17] Selectmen as voted this past Monday evening at the
[18] meeting regarding the Department of the Army's
[19] proposed plan for landfill remediation at the former
[20] Fort Devens is as follows:
[21] Number one. We support a plan of action
[22] that removes all risks for human health and the
[23] environment associated with the Devens landfills.
[24] Number two. Our submitted plan involves

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[1] excavating AOC 9, SA 13, and AOC 40 and doing site
[2] remediation on AOC 41, SA 6, and SA 12 and removing
[3] all of the excavated material to an off-site
[4] facility. We believe that additional studies should
[5] be done at AOC 11 to determine of limited removal is
[6] appropriate or if complete removal is the better
[7] option.
[8] By now, we're all very well aware of the
[9] nine criteria against which this proposed plan is
[10] measured. I'd like to take a second to just read
[11] them for you for the record, and they haven't been
[12] stated tonight yet.
[13] The first criteria is this plan should be
[14] recognized – excuse me – placed against the,
[15] No. 1, overall protection of human health and the
[16] environment; No. 2, compliance with applicable and
[17] relevant appropriate requirements – which basically
[18] means does the alternative meet federal and state
[19] environmental statues, regulations, and
[20] requirements – No. 3, long-term effectiveness and
[21] permanence; No. 4, reduction of toxicity, mobility,
[22] or volume through treatment; No. 5, short-term
[23] effectiveness; No. 6, implementability; No. 7, cost;
[24] No. 8, State acceptance; and, No. 9 – perhaps the

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[1] reason the majority of us are here this evening –
[2] is community acceptance.
[3] With that, we're all further aware that
[4] most people in this room seriously doubt whether
[5] this proposed plan meets all of those criteria. One
[6] thing that was made clear at the first hearing was
[7] that his proposed plan doesn't have public
[8] acceptance. And my comments this evening surround
[9] our hopes that there's an option available to the
[10] Army, an option that we believe has not – has not
[11] been considered in this plan fully which speaks to
[12] every last one of the criteria. That option is to
[13] remove material to an approved off-site facility.
[14] Off-site disposal meets all of the response
[15] objectives.
[16] At the first hearing on this matter, we
[17] presented information regarding the viability and
[18] appropriateness of an off-site disposal via trucks.
[19] Some people believed our numbers to be unsound. We
[20] have rechecked them, and we stand by them. What's
[21] more, we have new information that we have developed
[22] over the last several weeks that we believe proves
[23] to be even more appropriate and just as cost
[24] effective.

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[1] With the assistance of our engineers, we
[2] have analyzed the option of using rail to effectuate
[3] off-site disposal. And this, too, has proved to be
[4] not only feasible but preferable.
[5] We do not put this analysis forth as a
[6] definitive and complete look at the option; but we
[7] do strongly believe, as do our engineers, that it
[8] serves as a very strong foundation which proves that
[9] further consideration of off-site disposal is
[10] warranted.
[11] In short and in closing, I stand before you
[12] this evening representing the Ayer Board of
[13] Selectmen and in concert with the MDFA – who you'll
[14] hear from next – to state that the option of
[15] off-site disposal warrants a serious and immediate
[16] consideration.
[17] To the Army, we ask that you not move
[18] forward on your proposed plan. We strongly
[19] encourage you to issue an RFP – which is a request
[20] for proposals – as soon as possible to allow the
[21] validity and the viability of the off-site disposal
[22] option to be proven. We have done the legwork. Now
[23] the ball is in your court.
[24] We're all in this for the same reason, to

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[1] protect human health and the environment. And we
[2] should be working as allies in this regard. It is
[3] in this light that, and in a show of team work, that
[4] we offer to work with you in developing the RFP for
[5] off-site removal and do whatever it is that we can
[6] do to facilitate its timely issuance.
[7] Thank you all for allowing us the
[8] opportunity to speak before you this evening on this
[9] very important issue, and to the Army for coming and
[10] setting up the meeting.
[11] Thank you.
[12] **MODERATOR RAAB:** Bill Burke next.
[13] **BILL BURKE:** I'm Bill Burke, director of
[14] operations of Devens for Mass. Development. The
[15] address is 43 Buena Vista Street, Devens, Mass.
[16] I'd like to thank you for the opportunity
[17] to speak tonight. And to follow along with what Jim
[18] said, thank you to BCT, Lynn Welsh, Jim Byrne, and
[19] Jim Chambers for their professionalism and
[20] dedication over the last three or four years to
[21] bring us to the point where we are tonight on
[22] landfill consolidation. You brought us through the
[23] era of capping to what we wanted, which was
[24] consolidation; and now we're dealing with the

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[1] difficult issue of siting.
[2] At the last hearing, as I sat and listened
[3] to Jim Kreidler speak on behalf of the board of
[4] selectmen and he threw out the challenge of off-site
[5] disposal, I left that meeting thinking that I needed
[6] to go back and do some homework and take a look at
[7] the reports that we had put together. And the
[8] reports that we had put together at that time were
[9] coming up on two years old. And we had developed
[10] that information working with the BCT to bring forth
[11] capping and – excuse me – the consolidation versus
[12] the capping issue.
[13] So we went back and we started on a peer
[14] review of the reports that we had, looking at the
[15] trucking option and whether or not the numbers had
[16] changed and could we bring the economics of that
[17] down to somewhere in the realm of the
[18] consolidation.
[19] During that process, we were approached by
[20] a business that is in the business of hauling
[21] landfills by rail. And they own landfills out of
[22] state. The business approached us. It piqued our
[23] curiosity.
[24] We met with them once. We sat down at an

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[1] extensive meeting with them describing the kind of
[2] information we had, the existing landfills, the
[3] problems that we saw with unexploded ordinance and
[4] how that might affect the issue with the unknowns of
[5] the hazardous materials that we think may be in
[6] there; and that's the reason that we wanted
[7] consolidation in the first place.
[8] They left with some information that we
[9] were able to provide from some of the consultants
[10] that we had working for us.
[11] They called us back about a week later and
[12] said, "We think we can do this. Let's get together
[13] again."
[14] We had another meeting and went over the
[15] issues because I was really concerned that we didn't
[16] bring forth another proposal that might send us off
[17] on a coarse of action that wasn't feasible.
[18] We at the Devens Commerce Center have
[19] developed a concern that we get these landfills
[20] out. Nine affects the future of our regional waste
[21] water treatment plant, and 40 affects the drinking
[22] water.
[23] We met again. Again, a very, very
[24] favorable meeting. I raised my final concern and

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[1] that was viability of the intermodal operation at
[2] Devens and could that handle what we would
[3] anticipate as the number of loads having to leave
[4] Devens at a very, very fast pace.
[5] So we set up another meeting. We met with
[6] B&M and the folks from Gilford as late as last
[7] Tuesday. And this vet has spent most of the
[8] afternoon with Gilford.
[9] I got called back last Wednesday and said,
[10] "Now we really think we can do this."
[11] We had some more conversation; and at that
[12] point, I brought the idea to the DEP, EPA, and the
[13] Army and said, "I think we have a concept here that
[14] needs some further study."
[15] The findings and the summary of the efforts
[16] that we've put forth here that – and, again, this
[17] is information from a vendor who wants the business,
[18] who's in the business and would like the work; and
[19] we grilled him as best as we could.
[20] But we think based upon the information we
[21] have now, that the option of transportation by rail,
[22] not trucking, to an off-site licensed landfill can
[23] come in at about the same budget that the Army
[24] currently has for consolidation. The only way we

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[1] can prove those figures is for the Army – and some
[2] method under the FAR – Federal Acquisition
[3] Regulation – be able to in some expeditious manner
[4] that we can find, creative or otherwise, put
[5] something on the street where you can get numbers in
[6] from the vendors. And we know of four right now as
[7] this has started to bubble up that are interested.
[8] I talked to another one today that's interested in
[9] doing this. And they own over a hundred landfills
[10] that they operate.
[11] An interesting piece in the discussion with
[12] the vendor that we talked to is the time frame for
[13] doing this. Could be as much as half of what it
[14] would take us if we're constructing a landfill and
[15] working the consolidation issue. The reason for
[16] this is that there's not going to be any double
[17] handling of the material. The method that we
[18] propose at least to handle this now would be that
[19] they would be using intermodal containers. They
[20] would be loaded at the landfill site, closed up in
[21] those containers, taken by truck to the rail beds,
[22] essentially laid on the rail cars and shipped out.
[23] That's a very simple process as described,
[24] but it takes care of the double handling and,

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[1] therefore, the expeditious removal of that
[2] material.
[3] We think and agree with Jim and the board
[4] of selectmen at Ayer that this is a good option. We
[5] ask the BCT and the Army to explore this further,
[6] spend some more time on it. We think that the plan
[7] if we pull it together will meet all of the public
[8] and regulatory acceptance criteria that you need to
[9] maybe redo your plan. And whether it's two months,
[10] four months, or six months from now, whatever the
[11] time frame is that you can analyze this, we hope
[12] that the Army would publish a new plan that says
[13] off-site disposal by rail is the preferred option.
[14] Thank you.
[15] **LT. COL. MURDOUGH:** I'm Lieutenant Colonel
[16] Ed Murdough, the Devens Reserve Forces Training
[17] Area, 31 Quebec Street, Devens, Mass.
[18] Thank you, Mr. Burke, Mr. Kreidler. I want
[19] to assure everyone here that we believe that this
[20] proposal has merit. We do intent to explore it
[21] fully and determine its feasibility.
[22] In order to do that, though, we've got to
[23] get some hard facts and some hard numbers. We have
[24] absolutely nothing other than what we've heard here

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[1] tonight to support this plan. So we're going to ask
[2] both of you with your engineers and whatever other
[3] consultants you have to sit down with us in the next
[4] week or so so we can get your information and we can
[5] proceed with this plan.
[6] So Mr. Chambers will be contacting you to
[7] set up that meeting. And, again, it's very
[8] important that we do this as soon as possible so we
[9] can proceed with this evaluation.
[10] I need to rain on the parade a little bit
[11] here, though. I want to make it absolutely clear to
[12] the folks here that no one should leave here tonight
[13] thinking that this is the plan, the off-site
[14] disposal option. We have got a great deal of work
[15] to do to research this alternative and determine
[16] whether or not it's feasible, whether or not we want
[17] to recommend a change to the proposed plan.
[18] The proposed plan that's out for comment
[19] is – Shepley's Hill Consolidated Landfill is still
[20] out for public comment. That comment period ends
[21] March 9, which is not too far from now.
[22] So to remind the folks here, if you've got
[23] some concerns, some questions, some comments about
[24] the proposed plan for consolidating landfill at

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[1] Shepley's Hill, that's what you need to focus on
[2] tonight.
[3] Again, this alternative sounds like it's
[4] got some definite merit; and we want to proceed with
[5] it. But it is not yet part of the plan, and you
[6] have to remember that. And, again, we have to
[7] remember the process and make sure that we don't
[8] decide that everything is fine and dandy and leave
[9] here tonight and come back in 60 days or 90 days or
[10] however long it is right back where we started back
[11] on the 8th of January.
[12] So, again, thank you very much. We look
[13] forward to working with you, and we can see where
[14] this thing goes.
[15] **MODERATOR RAAB:** At this point, we're going
[16] to open it up for other comments and questions. You
[17] don't all have to line up. We'll stay here until
[18] you're done or we reach eleven o'clock.
[19] Just to remind everybody, first say your
[20] name – if it's got a difficult spelling, if you'd
[21] please spell it for the recorder – your address.
[22] Let us know if you're going to have a comment or a
[23] question or both. And the panel will then decide
[24] who's best equipped to respond to the question.

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So we've got a first shot over here.
JAMES WILLIAMS: Jim Williams. I'm the chairman of the Ayer Planning Board, but I'm not speaking in official capacity.
MODERATOR RAAB: Your address, sir?
JAMES WILLIAMS: Yes. My address is 21 Douglas Drive, town of Ayer.
I'd like to have the purple map put up, please. And I'd like for someone to interpret some of the things on the purple map so that I can understand it.
The first question is there's a circle that includes the Shepley's Hill site. Can you tell me what the circle is?
LYNN WELSH: My name is Lynn Welsh. I work for the Department of Environmental Protection at 627 Main Street in Worcester.
The circle that I think you're referring to is really a composite of several lines. One is the eastern portion right here of the Zone II for the McPherson well.
JAMES WILLIAMS: I believe there's a perfect circle, isn't there?
LYNN WELSH: Well, I don't see it here.

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I'm sorry. There is a purple map, the actual paper copy. The original purple map, it's out in the hallway.
(Mr. Williams demonstrates)
LYNN WELSH: Thank you. The circle you're talking about is an interim Zone II that is established around public supply wells before an actual engineered groundwater model is done based on a pumping test for a well. Usually, for a well of this capacity, it's a half-mile radius from the wellhead; and it is used for planning purposes until, again, a town establishes a real Zone II that's based on a groundwater pump test and modeling.
JAMES WILLIAMS: So that would be the Zone II that we use until we did that in terms of protection of the wellhead; correct?
LYNN WELSH: That's correct. And in this case, Ayer established the Zone II back in 1993 for the Grove Pond well which is located along the shores of Grove Pond; and the Devens Commerce Center established Zone II is accepted in January of 1995 for the rest of the four wells in the Devens, the MacPherson, Grove Pond, Shaboken and Patton well.

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JAMES WILLIAMS: So in either cases, the Shepley Hill site is within Zone II?
LYNN WELSH: In no case is Shepley's Hill site within a Zone II.
JAMES WILLIAMS: Well, because there's been a engineered version –
LYNN WELSH: That's correct.
JAMES WILLIAMS: Okay. While you're there, a second question about this map.
The large white area. That, as far as we know, is neither Zone I or Zone II or basically anything in terms of aquifer?
LYNN WELSH: That's correct. It does not meet the definition of medium-yield aquifer. It has less water than would filter that.
JAMES WILLIAMS: Okay. I want to confess that I would –
LYNN WELSH: You're setting me up; right?
JAMES WILLIAMS: No, I'm not setting you up. I'm setting myself up.
I want to confess that I was with the joint planning boards and worked quite a lot on this; and I have a lack of forethought, apparently, in realizing the implications of establishing the

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Shepley Hill site as a possible consolidation point. So I wish to recant that.
In the discussion of the siting, the criteria that were read by Mr. Kreidler included things like permanence. And if something requires possible remediation and so forth in the future because of failures, that doesn't sound very permanent to me.
In the large white area, there certainly are sites of eleven acres or less in size that could be used to site an on-site consolidation landfill. There are, I don't know, several thousand acres in this whole thing; and an eleven-acre area would not adversely affect the near term and probably the far term redevelopment of the post, being such a small fraction. So I think that we should really consider placing any consolidated landfill, if, indeed, there is one, rather than using the plan suggested this evening in an are that simply does not overlie an aquifer. That way you don't have to worry about failure. Because if there's a failure, there's nowhere for the failure to go.
LYNN WELSH: That's a good point. We'll take that under consideration. Thank you.

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[1] **MODERATOR RAAB:** We'll move over to this
[2] mike. I'm just going to go back and forth.
[3] **LAURIE NEHRING:** My name is Laurie
[4] Nehring. I live at 35 Highland Avenue in Ayer, and
[5] I'm the president of PACE. PACE is People of Ayer
[6] Concerned about the Environment.
[7] And, first, on behalf of PACE, I'd like to
[8] thank the panel for sponsoring this meeting tonight
[9] and especially for the BRAC office for coming back
[10] and answering a lot of our questions that we had
[11] from the last hearing, and Senator Durand for
[12] setting up this hearing and getting the ball
[13] rolling.
[14] Tonight, we are here commenting on the
[15] Army's proposal for remediation and consolidation of
[16] the six landfills on the decommissioned Fort
[17] Devens. At the January 8 hearing, I stated that
[18] PACE strongly opposes the Army's proposed location
[19] for consolidation for both technical and economic
[20] reasons. We continue to stand firm with this
[21] position.
[22] Based on additional research done by PACE,
[23] I will elaborate on some of the more crucial
[24] concerns related to the proposed location. I will

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[1] also suggest some alternative locations for
[2] consolidation.
[3] In addition, PACE now wholly supports the
[4] request for the Army to perform a complete
[5] excavation of the debris from AOC 11 which infringes
[6] on sensitive areas of the Nashua River and contains
[7] the remnants of an Army hospital which was
[8] demolished. A partial cleanup of surface debris
[9] only, as the Army currently proposes, is really not
[10] acceptable.
[11] PACE has been consistently concerned with
[12] the Army's proposed location for the consolidation
[13] landfill. It sits squarely on top of the regional
[14] aquifer which feeds Plow Shop Pond and Grove Pond,
[15] and it is in close proximity to Ayer and Devens
[16] public water supply wells. These concerns have been
[17] solidified by our recent analysis of the groundwater
[18] modeling studies for Fort Devens.
[19] Two groundwater modeling studies completed
[20] for the Army in 1995 and in 1996 were evaluated by
[21] our PACE consultants for overall quality, strength
[22] and weaknesses, and for reliability for remedial
[23] design. Previously, and even tonight, we have been
[24] informed that the direction of the groundwater flow

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[1] at Shepley Hill Landfill and at the consolidation
[2] site which has been proposed is to the north, away
[3] from Grove Pond and the Ayer water supply wells.
[4] However, our research has revealed some
[5] important exceptions. The full report from our
[6] consultants will be submitted into the formal
[7] record. The key points from this report include the
[8] following:
[9] The Fort Devens site does have complex
[10] hydrogeology. Overall, the Army's consultant did a
[11] relatively good job of crafting a computer model
[12] that incorporates this complexity. A lot of effort
[13] was put into capturing important physical
[14] characteristics that are often ignored or glossed
[15] over in many other models that our consultants had
[16] reviewed.
[17] That having been said, groundwater modeling
[18] is an imperfect science; and even good computer
[19] models can only approximate the characteristics of
[20] real sites. Thus, an important issue involves the
[21] limits of the model's predictive ability.
[22] The Army's groundwater modeling report,
[23] which tracked groundwater flow in and around the
[24] landfills, indicates that water from beneath the

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[1] site of the proposed consolidation landfill does
[2] appear to flow into Grove Pond, thereby creating a
[3] potential contamination source at Grove Pond.
[4] Water from Grove Pond is pulled through the
[5] sediments to recharge the municipal wells for Ayer
[6] and for Fort Devens.
[7] And if you look at – well, it's not up
[8] there now – but the map that was up there earlier
[9] that indicated the Zone II areas didn't show that
[10] the Zone II actually goes right underneath the
[11] pond. It kind of stopped at the edge of the pond
[12] where the Zone II actually goes right underneath the
[13] pond.
[14] The modeling showed that during typical use
[15] of Grove Pond wells where rainfall is average –
[16] where the rainfall is average – in other words, not
[17] a drought condition – up to 40 percent of the water
[18] entering the wellheads comes from Grove Pond.
[19] Obviously, we must protect Grove Pond. If
[20] the consolidated landfill leaks, contaminated
[21] leachate could enter Grove Pond. PACE has already
[22] submitted information for the public record showing
[23] a preponderance of evidence which shows that all
[24] landfills eventually do leak, even state-of-the-art

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[1] landfills.
[2] Clearly, placing the consolidation landfill
[3] in this proposed location is a poor choice. The
[4] potential impact on the regional aquifer and on the
[5] water supply wells for Ayer and Devens is
[6] substantial.
[7] So the next question is: What are the
[8] alternatives?
[9] Recently at PACE presentations to various
[10] public groups, we have been asked just that
[11] question, What alternative does PACE recommend?
[12] This is a very useful question, and the
[13] answer is not self-evident.
[14] We began searching for possible
[15] alternatives. We looked at maps and the Devens
[16] reuse plan. We spoke to EPA and DEP and openly
[17] discussed siting criteria. We have preliminary –
[18] we have had preliminary meetings with citizens from
[19] our local towns, at Harvard and Shirley, and with
[20] the Nashua River Watershed Association. We all
[21] firmly agreed that it's important for the Army to
[22] move forward, and that the landfill – with the
[23] landfill remediation as soon as possible in order to
[24] protect environmentally-sensitive areas and our

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[1] regional aquifers.
[2] During brainstorming sessions, it became
[3] clear that there are a number of possibilities for
[4] alternative sites which, to our knowledge, have not
[5] yet been evaluated.
[6] People at our meetings literally said about
[7] the map that's up there, "What about all that white
[8] space?"
[9] It also became clear that we needed input
[10] from the Army and from the Devens Commerce Center to
[11] go much further.
[12] PACE has developed a list of possible
[13] alternative on-site locations we feel we can
[14] support. An off-site location of course has not
[15] been ruled out; and, in fact, based on what we've
[16] heard here tonight, perhaps would be the best
[17] solution.
[18] First, on behalf of PACE, I would like to
[19] present our comments on the off-site disposal
[20] alternative which was presented by Jim Kreidler and
[21] Bill Burke.
[22] The proposal presented tonight for off-site
[23] disposal appears to be very promising. We are
[24] pleased that the calculations presented will be

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[1] verified by the Army, and we hope it will be done
[2] quickly. The Army should include the latest
[3] methodologies used for debris removal by rail since
[4] rail is so accessible on Devens. Bulk discounts
[5] offered by large commercial refuse handlers such as
[6] BFI must be considered. We also hope that recycling
[7] has been included in all the cost analyses.
[8] Materials from the landfill which can be recycled
[9] certainly should be recycled.
[10] These calculations should of course reflect
[11] the savings incurred by not having to construct a
[12] double lined landfill up to RCRA's specifications
[13] and by elimination of operation and maintenance
[14] costs over a minimum of 30 years.
[15] And, most importantly, we want to know
[16] specifically what kind of chemical analyses will be
[17] done for off-site disposal as opposed to on-site
[18] locations. The reliability of separation of
[19] hazardous waste from nonhazardous waste has always
[20] been a great concern for PACE.
[21] If the level or kinds of chemical tests are
[22] different – in other words, if the tests cost more
[23] for off-site disposal, we would like a clear
[24] explanation of why they are different. Is there a

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[1] higher level of protection or identification
[2] required if the materials are taken elsewhere? We
[3] would like these calculations to be fully disclosed
[4] and explained.
[5] If off-site disposal is not used, I
[6] respectfully request that the Army fully evaluate
[7] the alternatives I will describe below. This
[8] evaluation should place equal weight on
[9] environmental factors, economic factors, and on
[10] community acceptance. Other alternative locations
[11] for consolidation under consideration need to be
[12] disclosed – need to be discussed openly until an
[13] equitable solution is identified and accepted by
[14] local communities as well as the EPA and the DEP.
[15] These are the sites that we have agreed on
[16] within PACE.
[17] Number one. The South Post. The South
[18] Post contains over 5,000 acres. It should be looked
[19] at again. It seems that there must be at least a
[20] twelve-acre site which meets the siting criteria and
[21] will not infringe upon wetlands, the ACEC areas, and
[22] will not impact the Army's training programs. We
[23] suggest focusing on areas along Route 2 where the
[24] Army activities would be minimized.

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[1] Choice No. 2. The Federal Bureau of Prison
[2] medical facility contains approximately 200 acres on
[3] the southern portion of the Main Post. A
[4] twelve-acre landfill – you've been saying
[5] seven-acre – could be designed to create buffers in
[6] areas that would be acceptable to the Federal Bureau
[7] of Prisons.
[8] Three. New construction for the Devens
[9] reuse plan calls for a large number of parking
[10] lots. Why not incorporate the consolidation
[11] landfill underneath several parking lots? Asphalt
[12] forms a very impermeable cover. Perhaps the parking
[13] lots could be elevated.
[14] Number four. Along some areas of Route 2,
[15] there is a fair amount of land between the east and
[16] west lanes. There is additional land at the
[17] cloverleaf entrances and exits. Human exposure is
[18] minimal. A landfill might provide additional
[19] buffers between these two lanes.
[20] Number five. The Main Post contains over
[21] 2,000 acres. Aquifer maps indicate that much of the
[22] Main Post is identified as a white area. It does
[23] not overlie an aquifer. What other twelve-acre site
[24] can we identify on the Main Post which meets the

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[1] siting criteria?
[2] And, finally, No. 6. The combination of
[3] these alternatives should also be evaluated. For
[4] example, a combination might include some off-site
[5] disposal at an area that is more readily accessible
[6] by rail. Transportation by rail certainly should be
[7] considered for recycling of large I-beams and other
[8] metals. Combination solutions might be more
[9] equitable from the community acceptance perspective
[10] and might be more cost effective overall.
[11] In conclusion, PACE needs to work with our
[12] neighboring communities, which, together, can
[13] develop a close working relationship with the Army,
[14] MassDevelopment, the EPA, and the DEP to find a new
[15] location for the consolidation landfill debris and
[16] to pursue a more complete cleanup of the landfills.
[17] We recognize that an alternate site on Devens might
[18] infringe upon some developable land on Devens;
[19] however, we firmly believe that in the long run, we
[20] will all benefit with a regional approach because
[21] the water resources will be protected and the Army
[22] can move forward with remediation.
[23] Thank you.
[24] **MODERATOR RAAB:** Is there a question?

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[1] **LAURIE NEHRING:** Yes, I do have one
[2] question. I would like to know if the liquid waste
[3] pit which we've identified will be taken care of
[4] regardless of where the consolidation site might go.
[5] **JIM CHAMBERS:** The answer to that is yes.
[6] But as we described this evening, the evidence is
[7] that it is no longer there. But as we also
[8] discussed, we do intend to explore further for that.
[9] **LAURIE NEHRING:** You would check either way
[10] the same way?
[11] **JIM CHAMBERS:** I'm sorry. I didn't hear
[12] that.
[13] **MODERATOR RAAB:** Her question was even if
[14] you don't put the landfill there, will you still
[15] deal with the liquid pit?
[16] **LAURIE NEHRING:** In the same way. And
[17] you're saying you will?
[18] **JIM CHAMBERS:** Yes.
[19] **LAURIE NEHRING:** Thank you.
[20] **COLIN PEASE:** Good evening. My name is
[21] Colin Pease. I'm executive vice-president of the
[22] Gilford Rail System. We're located at Iron Forge
[23] Park in North Billerica. Again, I'll be very brief
[24] because I know my topic is not the subject of this

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[1] evening's meeting.
[2] We own the rail facility in the Devens
[3] Commerce Center. We have worked very closely with
[4] both the Devens Commerce Center, and, in the past,
[5] with the Army.
[6] We are very familiar with handling large
[7] amounts of bulk material. We are very familiar with
[8] the technology of moving waster material in
[9] containers that are used to move this waste
[10] material.
[11] Today, we operate a container facility in
[12] Maine where we load and unload as many as a hundred
[13] containers a day. We could certainly handle double
[14] that capacity. We have a new site at Fort Devens,
[15] which is really adjacent to the Shepley Landfill
[16] site, which has two 3300-foot tracks and a paved
[17] area, a loading area in the middle; and we also have
[18] another site which was our original load site, which
[19] is directly adjacent to Seacor and Gillette and the
[20] Shepley Landfill site, with some staging area.
[21] Today, we have two machines in place that
[22] are on base which are designed for lifting, loading
[23] containers on and off rail cars. We have worked in
[24] the past with a number of waste disposal companies

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and have in fact met with one and have been contacted by another. And there may be other contacts in our marketing department that I don't yet know about.

We have very good working relationships with other rail carriers. We can directly access permitted landfill sites in various parts of the country.

I'm here to tell you that we would simply be more than pleased to work with the Town, with the Army, any other member of the board who we should work with to explore the off-site opportunities. We certainly have the capacity to handle the containers. We have the capacity to transport them. And we're very familiar with the equipment that's being used.

So as you move in there, we're very able to respond quickly; and we'd be happy to work with you. And we do have the ability and capacity to handle their commodities.

Thank you very much.

MODERATOR RAAB: In the back.

STEVE MIERZYKOWSKI: My name is Steve Mierzykowski, spelled M-i-e-r-z-y-k-o-w-s-k-i; and

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I'm a law enforcement officer with the U.S. Fish and Wildlife Service. My address is 1033 South Main Street, Old Town, Maine.

Thank you for this opportunity to publicly comment on the Army's proposed plan for several hazardous waste areas at Devens. Over the past nine years, the U.S. Fish and Wildlife Service has provided the Environmental Protection Agency, Massachusetts Department of Environmental Protection, and the Army with technical assistance regarding investigation and remediation of lands – Devens hazardous waste lands.

In several instances, we have supported remedial actions developed under Devens environmental office. However, we are greatly concerned with the course of action the Army is currently proposing for some Devens hazardous waste sites. The U.S. Fish and Wildlife Service does not support the proposed plan. CERCLA, or the Superfund law, requires site venues to be protected of human health and the environment.

After reviewing the remedial investigation reports and considering the sitings of certain sites within the Devens landscape, we conclude that the no

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further action proposals for AOC 41 and SA 12 and the minimal action plan for AOC 11 are not protective of the environment. All three sites border ecologically-sensitive areas. AOC 41 is only a hundred feet from New Cranberry Pond, and SA 12 is within the floodplain of the Nashua River.

AOC 11, however, is our greatest concern. This landfill site is within a wetland, only 50 feet from the Nashua River, and easily adjacent to a new parcel scheduled for inclusion in the Oxbow National Wildlife Refuge.

AOC 11 has elevated concentrations of DDT in surface soils, subsurface soils, and wetland sediments. DDT is an organic pesticide that persists in the environment for decades and has a well-documented history of being a threat to wildlife resources. This site also contains – is also contaminated with trace elements.

The removal of surface debris from AOC 11 would not adequately address the contaminant threats posed by this site. We strongly believe AOC 11 is a hazard to wildlife within the site's wetlands and a threat to aquatic resources of the Nashua River.

The remediation and subsequent restoration

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of AOC 11 would be the most appropriate long-term actions to protect the environment in an approach that would be entirely consistent with the objectives of CERCLA.

There is a general reluctance among natural resource management and regulatory agencies to disturb wetlands in order to remove contaminants. We understand this reluctance. The Service is committed to protecting and conserving the nation's wetlands, and we do not often recommend disturbing them. However, certain contaminants such as PCBs, mercury, and DDT are particularly hazardous to fish and wildlife. These contaminants readily accumulate in organisms and increase in concentration or biomagnify at each step up the food chain. If these contaminants occurred in the elevated concentrations as they do in AOC 11, the well-being of the wetland warrants more aggressive actions than the simple removal of surface debris.

While we comment the Army's recognition of the functions and values of wetlands, in this instance, we do not concur that leaving contamination in place within AOC 11 would be less harmful than remediation. We urge the Army, EPA,

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and maybe Mass. DEP to reconsider the proposed plan and select landfill remedies that are more protective of the environment.

Thank you.

BILL ECKEL: My name is Bill Eckel. I work for Disposal Safety, Incorporated, in Washington, DC – sorry.

Bill Eckel, Disposal Safety, Washington, DC. It's 1660 L Street, Northwest. ZIP code is 20036.

What I'd like to do if I could is to come up and show a few overheads and discuss that. Do we have an overhead projector?

And what I wanted to talk about a little bit is the current condition of the Shepley's Hill Landfill and how that affects the proposed siting and consolidation.

JANET KEATING-CONNOLLY: Bill?

BILL ECKEL: Yes?

JANET KEATING-CONNOLLY: I hate to interrupt you, but maybe you want to talk about why you're here and why PACE asked you to be here.

BILL ECKEL: Sorry. Yes.

I am environmental science technical

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advisor to People of Ayer Concerned about the Environment.

Is that what you wanted to know?

Okay. This is a map showing the general area of consolidation of landfill of the site and Shepley's Hill Landfill in relation to Plow Shop Pond and the western end of Grove Pond.

Shepley's Hill Landfill is a Superfund site, a national priority site. The reason being is that it is – water contaminated with arsenic is moving out of the landfill and into the aquifer.

It was mentioned in passing before that there is a five-year review of the Shepley's Hill Landfill remedy which was – the remedy was to cap the landfill and then to wait until the levels of arsenic declined to acceptable levels. And for the first time they're acceptable levels was defined as a 50 percent reduction in cancer risk from arsenic.

The five-year review, I received that on Monday. I've had a preliminary look at it, and my preliminary reading of that is that I disagree with the Army's conclusion that the chosen remedy, capping and monitoring, for Shepley's Hill Landfill is effective. I do not agree with that conclusion.

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The levels – first of all, what this map shows is sediment contamination in Plow Shop Pond and these concentric rings on the western end show –

MODERATOR RAAB: Can you lift the map up a little higher?

BILL ECKEL: The concentric rings there show successively higher concentrations of arsenic in the sediments in the bottom of Plow Shop Pond. And so what you're seeing here is groundwater discharging from the pond – from the landfill into the pond and contaminating the sediments. It is apparently continuing to do this because water is continuing to flush through.

Since the five years ago when it was decided that capping was an appropriate remedy, it has been discovered that the main avenue for groundwater discharging from the landfill is to the north to the wetland an Nonacoicus Brook. I hope I'm pronouncing that correctly. I've heard several pronunciations.

Anyway, the levels in the wells at the north end of the landfill are – and, particularly, Well 5-B – the levels are 2,000 to 3,000 parts per

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billion of arsenic. And that is in the dissolved phase which means they're mobile. That kind of level is ten times what the Army and EPA were thinking about when they decided that capping would be an appropriate remedy. These wells were only drilled in 1996. And so this is a very much different situation than what we though we had in '93.

The numbers I've written on here are the concentration of arsenic from the most recent sampling round of groundwater in October of '97. And these are – arguably, in my opinion, do not show a 50 percent reduction in arsenic concentration over the first five years. In fact, the Army in their five-year report – review state as much.

The wells to the west of Plow Shop Pond are Nos. 4, 9 – excuse me – 4, 10, 11, 19, and 20, which, as you see here, the Army says do not meet cleanup goals in which the trend in arsenic concentration is going up. So, clearly, the remedy is not working.

The contingency remedy for Shepley's Hill Landfill is to pump the groundwater out, treat it for arsenic, and then discharge the treated water to

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the sanitary sewer system. To do that, the Army has a 60 percent design for a groundwater extraction system. I have some pictures from the 30 percent design, but –

MODERATOR RAAB: Can I just interrupt for one second. You started by saying you were going to make the nexus between the consolidated landfill and –

BILL ECKEL: I am about –

MODERATOR RAAB: Are you getting to it?

BILL ECKEL: I'm just about to do that.

MODERATOR RAAB: Okay.

BILL ECKEL: This is the Army's proposed design for – well, this is a 30 percent design. The 60 percent design differs in that there is only one well at the north end of the landfill. The red outline is Shepley's Hill Landfill.

JANET KEATING-CONNOLLY: You need to raise the slide.

BILL ECKEL: The red outline there is Shepley's Hill Landfill, and then you see Plow Shop Pond. And the lines are the flow paths for the groundwater.

Currently, the Army is proposing to put one

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well at the north end of the landfill to capture all this water that's flowing north under Shepley's Hill Landfill; and they are not planning to put any wells to capture this flow here that you see going beneath where the consolidated landfill is proposed to go. If they did put a construction well in that area, they would capture that flow. The reason – one of the reasons that the Army gives for not putting a well there is because that is where the consolidation landfill is supposed to go.

So the question is if you can't put a well there to capture contaminated groundwater, if the landfill goes there, how are you going to capture the contaminated groundwater if the landfill leaks?

My conclusion is there's just too much going on in this area to put in another landfill.

That's all I have. Thank you.

MODERATOR RAAB: Did you want to leave that as a comment, or were you going to ask a question?

BILL ECKEL: That's a comment.

MODERATOR RAAB: There's a request from the folks up here if they could get a copy of your presentations to put in the record.

BILL ECKEL: Certainly.

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MODERATOR RAAB: We're over here.

LYNN WELSH: Jonathon?

MODERATOR RAAB: Did you want to respond?

LYNN WELSH: Actually, I think I do. Just for the State. I can't speak for the Army since Jim is sitting right here.

But I think one thing people should understand is something that wasn't presented is that the five-year review report is just out; and we haven't commented on it yet. We have been given preliminary information as you have in your report, and we're reviewing it.

There are some disturbing information that was in the report. But yet that does not mean that it is not going to be discussed, comments aren't going to be made, and we're not going to evaluate the direction that – that the information suggests should be altered and changed.

So, again, the thing that was brought up tonight is that we are here to talk about the proposed plan. Shepley's Hill is a Record of Decision that has already been made. We're going through trying to implement it. It can be adjusted at any time during the process in conjunction with

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what was decided and how things are going.

JAMES BYRNE: Jim Byrne, USEPA, JFK Federal Building, Boston.

Bill, I just wanted to take issue with your comment concerning the lack of monitoring wells in that area. Although I agree with you in part that the reason there aren't any wells in the general area of the consolidation facility is because that's where the facility is going is true.

What you didn't mention, though, is that if this facility – proposed facility is sited here, is that area will be surrounded by wells. So we anticipate on having a pretty good picture of the groundwater there after the consolidation facility is in place.

As for the current information, your map also did not show the existing monitoring network there which I think we all believe there's adequate coverage in that area.

BILL ECKEL: Jim, I wasn't talking about the monitoring wells – excuse me.

I was not talking about monitoring wells but extraction wells.

JAMES BYRNE: Well, again, I guess I would

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still stand by the comment I made that we do have a number of monitoring wells in that area; and to date, those areas – there's nothing on the southern portion of the landfill that we feel are adequate.

MARK APPLEBY: I'd just like to add a little. Mark Appleby, Army Corp. of Engineers, 424 Trapelo Road.

The last part of your comment was in regard to the rationale for eliminating the extraction well in the area of the proposed consolidation landfill. That monitoring well was eliminated, one – I'm sorry – extraction well was eliminated, one, because of the fact that the consolidation landfill was going to go there; but more importantly because if you look at all the monitoring wells that are in that area, they are not contaminated. They're all below the cleanup levels for the site. That's why that was eliminated. Not because the cell was going to be there, because it won't be collecting any contaminated groundwater.

BILL ECKEL: I'm not talking about present contamination. I'm talking about the potential future contamination problem in the foundation

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records.

MARK APPLEBY: We have a 30 percent design and then the 60 percent design. We need to base that on what information we know currently. If conditions were to change in the future, then we would have to come up with another way to extract any of the contaminated groundwater.

MODERATOR RAAB: Can we move on? I think we logged the point fairly well here.

BILL ECKEL: Thank you.

JOHN PETRIN: John Petrin, Town Administrator, Town of Harvard, 13 Ayer Road, Harvard, Mass.

Two points. First, the Harvard Board of Selectmen support the continued review of the plan proposed by Jim Kreidler and Bill Burke early this evening.

Second, we'd like to state on the record our concern for AOC 41. We'd like to have a further review of that landfill. Right now it's being – basically, the debris on top is being cleaned up; but the landfill itself is not being cleaned up. There is concern that there are volatile organic compounds in the groundwater samples. At this

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point, we're not sure exactly what is it in that landfill. And it is extremely close to the Nashua River, the Oxbow; and we believe because of the way the water flows, it does have an effect on the potential water supplies in the still river portion of the Town of Harvard. So we'd like to have further review of that decision on AOC 41.

Thank you.

MODERATOR RAAB: In the back.

JOAN PENA: Thank you. My name is Joan Pena. I live at 145 Oak Ridge Drive in Ayer, but I'm speaking to you tonight as the vice-president of the Nashoba Valley Chamber of Commerce. And we're located at 43 Buena Vista Street in Devens.

This is a letter that's being sent to Mr. Jim Chambers at BRAC Environmental Office.

Dear Mr. Chambers, the board of directors of the Nashoba Valley Chamber of Commerce, representing 370 businesses of Devens and in the surrounding communities, wishes to go on record as having concerns about the Army's proposed plan for consolidation of landfills in Devens.

The BCT identified ten criteria for evaluating landfill remediation options. It is the

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board of directors' contention that the proposed plan fails to meet some of these criteria at all. The most obvious is the need for public acceptance. Residents and elected officials in the town of Ayer have objected vociferously to the possibility of consolidation at Shepley's Hill. They have contributed an extraordinary amount of time to their efforts. They have done extensive research. They have remained convinced that the army's proposed plan will have a negative impact on their town and have so stated at every opportunity. The Army cannot believe in light of the strenuous objection that the proposed plan has met with public acceptance.

Another criterion is long-term effectiveness. We question whether any proposed solution which does not feature a double lined landfill cell can be considered to have long-term effectiveness. We also question the Army's failure to include AOC 11 in the consolidation plan. Given the proximity of the site to the Nashua River, we would ask that a more comprehensive analysis of potential environmental hazards be made available to the public.

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[1] Finally, we would note that one of the ten
[2] criteria is cost. It is apparent that this
[3] criterion has been given undue weight and that cost
[4] has become the deciding factor much more so than
[5] environmental, human health, or economic development
[6] concerns. Surely this cannot be the legacy we wish
[7] to leave behind as you enter your final years as a member
[8] of our community.
[9] Sincerely, Jacqueline Esielionis,
[10] President.
[11] Thank you.
[12] **HEIDI RODDIS:** Thank you. My name is Heidi
[13] Roddis. I live at 32 Brown Road in the town of
[14] Shirley. And I am here tonight both as a citizen of
[15] Shirley, and I am also on the Shirley Conservation
[16] Commission. I'm the vice-chairman of that
[17] commission. I also professionally work for the
[18] Massachusetts Audubon Society, an environmental
[19] policy specialist, and am a member of the
[20] Restoration Advisory Board.
[21] So in all of those capacities, I have been
[22] following the Devens environmental cleanup and reuse
[23] planning for a number of years now and first want to
[24] take this opportunity to note the progress that has

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[1] been made. A year or so ago, at Restoration
[2] Advisory Board meetings, we were talking about a
[3] plan basically to leave all of these six landfills
[4] in place, which I found totally unacceptable, and am
[5] pleased to see that we're at least halfway there now
[6] in terms of the commitment to clean them up. They
[7] are in sensitive areas, in wetlands, lowland areas,
[8] in contact with groundwater, and in floodplains
[9] where they're subject to periodic disturbances and
[10] being spread into the surrounding environment.
[11] The other people who have commented about
[12] the other three landfills that are not proposed to
[13] be excavated at that point, and I would echo their
[14] comments that they need to be cleaned up as well.
[15] In particular is Area of Concern 11, which I did
[16] have an opportunity to go on a site visit and was
[17] disturbed to see its proximity to the Nashua River
[18] which so much time and effort and money has been
[19] invested in cleaning up that very important regional
[20] asset.
[21] And in particular, I'm disturbed – in the
[22] proposed plan, there is a statement that a berm
[23] separates the landfill from the river. That does
[24] not match with what I observed on my site visit to

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[1] the location. There really was nothing separating
[2] the landfill or debris area from the river itself.
[3] Also, I'm concerned because that debris area in
[4] particular we took place well after passage of
[5] the Clean Water Act and Wetlands Protection Act.
[6] With some of these other landfills that have been
[7] deposited in wetlands, it could be argued that, you
[8] know, some of that work took place many decades ago
[9] before legislation prohibiting the disposal of
[10] materials in wetlands. But in this case, we know
[11] that it was well after that. And, basically, the
[12] Army illegally filled wetland in this case; and I'd
[13] like to see them clean it up.
[14] And I also share the Fish and Wildlife
[15] Services' concerns about the two landfills on the
[16] South Post. Those are smaller landfills. And I
[17] think that we should do the job right and clean all
[18] six of them up at this time.
[19] Next, I'd like to talk about the issue of,
[20] well, what do we do with the material. Certainly,
[21] there have been a lot of very valid issues created
[22] with the Shepley's Hill site; and I think it's clear
[23] to us all that we need to find another solution at
[24] this point. We've heard tonight of a perhaps

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[1] promising solution for off-site disposal. The only
[2] concern that I have in that regard is that we not
[3] transfer this problem to someone else's backyard and
[4] that just because – you know, these other landfills
[5] may be licensed and operated; but I'd like to see as
[6] part of the review process, you know, what are their
[7] standards? Are they single lined? Doubled lined?
[8] Are they lined at all? Are they in someone else's
[9] aquifer? Are they near someone else's
[10] neighborhood?
[11] And then, finally, in regard to the review
[12] process I think should take place now for finding
[13] the solution, I would also like to see a review of
[14] that so-called white area in the redevelopment
[15] zone. It is outside the aquifer.
[16] And, you know, I was involved extensively
[17] in the planning process; and during that process,
[18] this issue really wasn't aired to any detailed
[19] extent. And to say that, well, we can't put
[20] consolidation landfill anywhere in that area because
[21] it's not consistent with the reuse plan, well, we
[22] didn't know we'd be facing what we are now at that
[23] time. And I would encourage the Mass. Development
[24] Finance Agency to work with Army and DEP and EPA

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[1] concurrently with this review of the off-site
[2] alternatives so that all possibilities can be
[3] reviewed in a timely manner and we can get to the
[4] next stage and start cleaning these things up.
[5] And just lastly, I would like to mention a
[6] concern that I have specifically with the North Post
[7] site that was the sort of second preferred
[8] alternative for consolidation landfill. Speaking
[9] both as a citizen of Shirley and concerned for the
[10] regional aquifer, that that area, it may be outside
[11] of defined zone IIs, but the Shirley well doesn't
[12] have an engineered Zone II. It's just a circled
[13] radius. And there's also a planned new well for
[14] Shirley. It's not on any of those maps. And even
[15] the area that is outside of the official aquifer up
[16] on the North Post, it's all sand and gravel. So,
[17] you know, water flows through there into the
[18] aquifer.
[19] So it doesn't seem to me a good
[20] hydrogeologic setting, and I hope that we find some
[21] solution that's outside of our regional aquifer and
[22] other folk's regional aquifers wherever the final
[23] disposal site is selected.
[24] Thank you.

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[1] **MARTHA CRAFT:** My name is Martha Craft. I
[2] live at Eight Calvin Street, Ayer. And I'd just
[3] like to read a statement, and then I have a
[4] question.
[5] I'd like to reiterate my comments of the
[6] 8 January meeting that all the debris, including
[7] AOC 11 and Shepley's Hill, be removed off-site via
[8] rail. Additional information has been presented
[9] this evening to support and encourage this
[10] alternative plan.
[11] I'd refer you to Slide 24, the Conceptual
[12] Landfill Remediation Screening.
[13] Removal by rail would change this
[14] eleven-step process to a two-step process, excavate
[15] and ship out. Certainly, this option would be both
[16] time and cost efficient.
[17] At no meeting that I have attended has
[18] anyone been willing to comment on long-term
[19] remediation if a problem arises either with regard
[20] to water or soil issues. And I'm speaking now not
[21] as a 30-year time – window of time but beyond 30
[22] years.
[23] With all due respect, I have attended and
[24] have gotten the impression from all of these

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[1] meetings that I have attended that the decisions
[2] have been made already. At each meeting I have
[3] attended, the visuals improve and a bulk of
[4] information is disseminated. All of the information
[5] as time goes on moves forward with a plan to use
[6] Shepley's Hill to the point that this evening
[7] conveniently to answer questions of the 8 January
[8] meeting, we have preliminary truck routes for moving
[9] this debris to the Shepley site.
[10] I hope that this impression that I'm
[11] getting is false. I do hope that you will seriously
[12] consider the rail alternative suggested both at the
[13] 8 January meeting and again this evening. It is a
[14] viable and feasible alternative to the Shepley
[15] site. That's my comment.
[16] My question is – and, again, I heard it
[17] this evening – that this plan is the plan and that
[18] we're just talking about how to implement the plan.
[19] Are we spinning our wheels by having these public
[20] meetings, or are there alternatives that can be
[21] considered other than the Shepley Hill site?
[22] I'd appreciate an answer to that question.
[23] **JIM CHAMBERS:** As we said this evening, and
[24] throughout this process, we are reviewing this plan;

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[1] and that's why we're here, to solicit your comments
[2] and take these comments – you've made some very
[3] good comments and we do – and we will consider them,
[4] evaluate them, and respond to them. That is the
[5] purpose for this plan, to bring in you and the rest
[6] of the community and hear what you have to say about
[7] this. We are very interested in hearing that.
[8] We've heard some alternatives proposed as far as
[9] off-site disposal.
[10] In order to conclude the review of the plan
[11] that we have put forth, we have to follow through
[12] with this. So tonight was the public hearing, the
[13] second public hearing we've had in this. The public
[14] review process, the comment period, began December 8
[15] and initially was going through January 22. We
[16] extended it for another 45 days to continue
[17] soliciting your input and through March 9. As of
[18] March 9, we will take all the comments received and
[19] consider them, evaluate them, and respond to them.
[20] And then based on that, a proposed plan will either
[21] be modified or a decision will be made that the work
[22] done to this date is insufficient and further work
[23] is required. And then from there, the final – or,
[24] actually, the draft Record of Decision will be made

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[1] and then a final Record of Decision will be made.
[2] So it's very important for everybody here
[3] that this is your opportunity. And throughout this
[4] process, we've made the documents available. We've
[5] put them in the repositories. We've announced their
[6] availability. And we will continue to do that. We
[7] are not operating in a vacuum. We appreciate the
[8] comments you've made, and we will consider them.
[9] **MARTHA CRAFT:** May I?
[10] I appreciate that you appreciate our
[11] input. My question is: Is it possible that you
[12] will – at the end of that 60-day period where you
[13] have to respond to this plan, is it possible that
[14] you can come back and say, "This is not a plan
[15] that's feasible. We are looking at other
[16] alternatives now?" Because, otherwise, why are we
[17] coming to these meetings?
[18] **LYNN WELSH:** Martha, I think what you just
[19] said is right. We are at a – we're at a proposed
[20] plan stage. We have a proposal for you so there's
[21] an extensive comment period. And during the time
[22] we're taking comments, we don't change the plan.
[23] But we're working actually with the Town of Ayer's
[24] proposal and with the Land Bank proposal to evaluate

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[1] them.
[2] The comments that are made tonight may
[3] change the proposed plan that you are looking at now
[4] so it reflects those comments. It may be the same
[5] proposal. It may be off-site. It may be a
[6] different location.
[7] So it isn't that we're not listening.
[8] We're just bringing in the same plan to you again
[9] and again to get people up to speed to understand
[10] what we're trying to propose and help you understand
[11] what the ramifications of that proposal are so you
[12] can make comments back to us and tell us if you
[13] agree or not agree.
[14] **MARTHA CRAFT:** Thank you.
[15] **LYNN WELSH:** So that's how it's working.
[16] **MARTHA CRAFT:** Thank you. Again. I
[17] encourage you to consider the off-site location.
[18] **MODERATOR RAAB:** In the back.
[19] **DEBORAH SKAUEN-HINCHLIFFE:** I'm Deborah
[20] Skauen-Hinchliffe, and I live at Still River Road.
[21] The name is spelled S-k-a-u-e-n.
[22] I would like to request at this time that
[23] the scope of cleanup is going to include all the
[24] contaminated areas in the South Post. It is also my

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[1] understanding that a lot of testing – a lot of
[2] areas were not tested on the South Post due to Army
[3] constraints, and I think this would be a very good
[4] time to expand if this is true and go into those
[5] areas to determine what contaminants are in those
[6] areas.
[7] From the information that I have down here,
[8] my understanding is that contaminants have been
[9] identified on South Post which include volatile
[10] organic compounds, which, among other things,
[11] depresses the central nervous system; metal
[12] contaminants which affect the pulmonary, kidney, and
[13] cardiac systems; polycyclic aromatic hydrocarbons
[14] which cause stomach tumors, skin and lung cancers.
[15] And, specifically, at AOC 41, the
[16] predominant groundwater flow discharges into the
[17] Nashua River. The groundwater in this area is
[18] contaminated by several VOCs, and a number of the
[19] metals are also present.
[20] I also understand that the source – the
[21] actual source of the contaminants has never been
[22] determined. Is this true?
[23] This is from your own literature.
[24] **JIM CHAMBERS:** Yes, the source has not been

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[1] identified for that. But the AOC 41, AOCs 25, 26,
[2] and 27, comprise remedial action that was approved
[3] by the Army, the EPA, and the DEP. It's called
[4] South Post Impact Area Record of Groundwater
[5] Molecules, and that remedial action was improved in
[6] July of 1996. And they are undertaking that action
[7] now.
[8] **DEBORAH SKAUEN-HINCHLIFFE:** But you are not
[9] proposing to clean up those sites. You're just
[10] proposing remediation.
[11] **JIM CHAMBERS:** No. What we propose to
[12] do – the remedial action under the guidance given
[13] by EPA includes a long term monitoring. And that is
[14] a real action that's been approved. And what we are
[15] doing is monitoring that to ensure that there is no
[16] further detriment to the environment. And in the
[17] case that we are able to identify a source during
[18] that monitoring period or see that the levels
[19] change, then more aggressive action will be
[20] considered.
[21] **DEBORAH SKAUEN-HINCHLIFFE:** Well, I think I
[22] would very much appreciate since I live in that area
[23] for you to restudy that and to expand the cleanup to
[24] include cleaning out that area, not simply, well,

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[1] let's check it on occasion. Let's clean it up now
[2] while the money is there.
[3] I feel very strongly since no one has
[4] really, really, pushed I don't think until tonight
[5] for the South Post to be cleaned out, that it's been
[6] ignored; and you can get away with it because no
[7] one's been yelling very hard. And I'm very, very
[8] concerned about the long-term effect on the Nashua
[9] River watershed which this will ultimately have. So
[10] thank you.
[11] **JIM CHAMBERS:** Comment noted.
[12] **PATRICK HUGHES:** My name is Patrick
[13] Hughes. I live at 27 Groton Harvard Road here in
[14] Ayer. I'd like to thank all concerned for this
[15] second opportunity to comment
[16] The issue is no longer whether a landfill
[17] will be located in the town of Ayer because of the
[18] overwhelming response against it. You cannot by
[19] your own mandates or acceptance pursue this any
[20] further.
[21] What we turn our attention to now is why
[22] are you stopping short of cleaning up the whole
[23] problem? Again, I bring up the Army building a
[24] playground at Pirone Park as an example of positive

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[1] relationship between the people of Ayer and the
[2] former Fort Devens. It was such a generous
[3] gesture. Why stop now? Why end this 80-year
[4] relationship with the town of Ayer on a sour note?
[5] Why not clean it up? But please understand that we
[6] want it all cleaned up.
[7] At the beginning of the January 8 meeting,
[8] Colonel Murdough talked to us about how these dumps
[9] were from a town of 14,000 not too different from
[10] our own. With all due respect, sir, I must take
[11] issue with that statement.
[12] I have lived in a few small towns in my
[13] life, and I do not remember in any of them live
[14] ammunition firing taking place. I do not remember a
[15] Vietnam village being built for practice – remember
[16] that was the war of defoilants and napalm – in any
[17] town we lived in. I can't recall any fuel depots or
[18] munitions storage areas in any small town. We
[19] bought our goods from the local store, not from
[20] military supply where the high quality all too often
[21] meant highly toxic. And where is the refuse from
[22] all of that now? I can think of 84 acres that would
[23] be a good place to look.
[24] It is easy to find that acreage. Just take

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[1] a walk around Plow Shop Pond and it's that place
[2] where the bright orange goo runs into the pond. It
[3] would almost be pretty if you didn't know how ugly
[4] it is. That bright orange goo is still running into
[5] the pond in spite of the state-of-the-art cap and
[6] the monitoring wells
[7] Clean it up, please. Clean it all up.
[8] **MODERATOR RAAB:** In the back.
[9] **DOUG WINTER:** My name is Doug Winter. I
[10] live on Oak Hill Road in Harvard. I've been part of
[11] the people who have been fighting the siting of a
[12] sludge plant in Harvard. Some of you may know about
[13] it. It's certainly been in Ayer as well. I'm here
[14] not for that reason but for the reason that you're
[15] all here now, and that is the issue of the
[16] consolidation of the landfills.
[17] There has been a great concern in our
[18] experience with the sludge plant that the DEP and
[19] the Massachusetts Development Finance Agency and the
[20] Land Bank haven't been dealing us a straight hand.
[21] I find it odd that a scientist hired by or working
[22] for the PACE organization could come up here and
[23] talk about arsenic contaminating one of the local
[24] ponds that is in contact with the drinking water

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[1] supply. That was completely ignored by all the
[2] presenters here this evening. Everyone seemed to
[3] indicate that all the water would flow in river
[4] fashion to the north away from all drinking water,
[5] and we find that a landfill that already exists
[6] there at the site which would abut the proposed
[7] additional landfill has potential of also
[8] contaminating that water as well. That was ignored
[9] completely by the presenters.
[10] The other issues that I'm concerned with
[11] are that – what we do here can be seen here, and
[12] it's a vacuum. And for that reason, we at Harvard
[13] began a web site. And it's www.devenswatch.org. We
[14] want to make sure that everyone's concerns, be they
[15] selectmen of Ayer or the Audubon Society or the PACE
[16] people or the citizens to protect residential
[17] Harvard or anyone else who wants to get information
[18] out there where everyone can see it and can have
[19] access to it at any time, please send us
[20] information; and we'll make sure that there's a
[21] record that's accessible easily by everyone at any
[22] time.
[23] Thank you.
[24] **JANET KEATING-CONNOLLY:** My name is Janet

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[1] Keating-Connolly with Community Environmental
[2] Resources, P.O. Box 209 in Ayer, Massachusetts. I
[3] am one of the technical advisors to PACE as well as
[4] their community outreach coordinator. In that
[5] light, although the room is emptying out, I do want
[6] to let people know that we have provided postcards
[7] where you can write down your comments. Maybe you
[8] don't like coming up to microphones, or worse, being
[9] on television; and if you do have a comment to
[10] offer, you can fill out a card at our table out in
[11] the hallway and drop them in boxes that are there
[12] and we will hand them to Jim Chambers. We will give
[13] them to Jim Chambers tonight.
[14] **JIM CHAMBERS:** Well, you can send them to
[15] me; but I suggest you can put the correct address on
[16] it so that they will get to me.
[17] **UNIDENTIFIED AUDIENCE MEMBER:** Would you
[18] be so kind to provide the address to us all.
[19] **JIM CHAMBERS:** Certainly. It's on the
[20] proposed plan. We have it out there. And I'll cite
[21] it to you now. You can sent it to me at Jim
[22] Chambers, BRAC Environmental Coordinator, Devens
[23] RFTA, 30 Quebec Street, Box 100, Devens, Mass.
[24] 01432.

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[1] **JANET KEATING-CONNOLLY:** I had a few
[2] questions for the panel just so I can understand
[3] some of the things that were said tonight.
[4] Will a formal document on the site
[5] selection process be produced by your group, the
[6] site selection process for identifying Shepley's
[7] Hill as a location for the consolidation landfill?
[8] **JIM CHAMBERS:** No. No additional
[9] documentation will be done on that. We stand by the
[10] FS that's been done.
[11] **MODERATOR RAAB:** Did everybody hear that?
[12] Could you repeat it a little bit louder.
[13] Jim.
[14] **JIM CHAMBERS:** Well, additional
[15] documentation may be done if there's additional
[16] siting evaluation done based on the comments
[17] received. But for the siting that we have done,
[18] there are will be no addition documentation on that.
[19] **JANET KEATING-CONNOLLY:** Okay. I'll just
[20] offer this comment, then.
[21] We are quite concerned about the fact that
[22] there's an old siting study for a facility that is
[23] very different from a landfill and then some
[24] allusions to BCT meetings which of course we weren't

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[1] a part of and meeting notes aren't available to us
[2] so there is no way for us to sit down and understand
[3] your thought process as to how you chose Shepley's
[4] Hill to be the appropriate location for the
[5] consolidation landfill.
[6] Further, if that is truly the appropriate
[7] location, you should be able to provide the
[8] documentation to support that claim.
[9] The other comment related to documentation
[10] and the research that we're trying to do. Will a
[11] work plan be developed that describes how you will
[12] segregate the waste?
[13] **JIM CHAMBERS:** Yes. The work plan is
[14] developed as part of the design and the execution of
[15] the work when we do the work.
[16] **JANET KEATING-CONNOLLY:** Is that work plan
[17] open to public comment?
[18] **JIM CHAMBERS:** Certainly.
[19] **JANET KEATING-CONNOLLY:** And the other
[20] question I have has to do with where the water is
[21] flowing. There's a lot of discussion that we are
[22] supposed to be allayed – our fears are to be
[23] allayed because the groundwater near Shepley's Hill
[24] does not flow towards Grove Pond drinking water

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[1] wells, but PACE is a regional group concerned about
[2] the regional aquifer.
[3] And my question is if groundwater is
[4] flowing to the north, what are the receptors to the
[5] north that could be impacted by groundwater
[6] contamination?
[7] **JIM CHAMBERS:** We agree with your concern
[8] and understand that, and that's – the five-year
[9] review identifies that concern and purposes that we
[10] do that work to find out what those receptors are.
[11] **JANET KEATING-CONNOLLY:** So you do not know
[12] what the receptors are north of the Shepley's Hill
[13] Landfill, and it was closed in 1993? And five years
[14] later, you're telling me you don't know where that
[15] water is going. Is that true?
[16] **LYNN WELSH:** Yes, we do know where the
[17] water is going. What we will be doing, this
[18] five-year review reviews the present information to
[19] determine the next course of action in evaluating
[20] more detail where the water actually runs –
[21] groundwater actually goes and where it comes up as
[22] far as receptors. Just because there's a wetland to
[23] the north, that may not be the receptor. If you're
[24] dealing with deep groundwater, it may go underneath

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that wetland and go to a regional discharge area which would be the river.

So that the way that you put your question seems that we don't have forethought of what we're going to do. We don't have the detailed knowledge that you're asking for, but the review of the data presently will help direct what the next phase of evaluation will be so we can more finally determine the exact nature of the discharge that you're talking about. It would do no good to have a plan to put wells north 40 or 50 feet from where we have wells already if the – if the contamination wasn't there and it was over in a different part of the landfill. So you do a stepwise evaluation. You put in wells. You find the data. You evaluate the data, and you move again. But we know because of the groundwater modeling because of the regional groundwater flow the general direction that it's going, and the you evaluate the possible receptors along way after you have the baseline data.

Does that help?

JANET KEATING-CONNOLLY: Thank you, Lynn.

Let me finish up with a very quick comment. I have permission from Bob Levite to quote

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from a letter that he sent to PACE regarding this issue. And he starts out with:

It is inherently wrong to place another landfill next to an existing landfill that poses continuing monitoring and contamination problems. The Nashua River Watershed Association also believes that the proximity to the Ayer water supply poses a significant amount of potential risk, regardless of the perceived underground water flow and the claimed safety of the double-lined surface, and that placement elsewhere on the Devens compound or at some off-site location is more protective of the town of Ayer.

MODERATOR RAAB: I want to make sure – I know that you're coming up to the microphone again. I think we want to make sure that everybody gets their first shot; and then, time permitting, we can keep on going.

Okay.

LUCY WALLACE: I'm Lucy Wallace. I'm from the town of Harvard, 18 Orchard Hill.

I spoke at the January hearing about my concern regarding cleanup of all the excavation of all the designated areas except for the old

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farmstead. I don't need to repeat that.

I think it's very clear tonight that people are concerned about the proposed consolidation landfill site. And I've been working with ECCA and EPA and folks from Ayer, Shirley, and elsewhere to come up with an alternative. And I think we've all beaten this into the ground, but I would like to see something come out of this meeting that says what's the process beyond all of us going away and waiting for either a Record of Decision or another proposed plan coming from the Army. I think we want to see this process get underway. I think the State wants to see the sites cleaned up so that they can go on with their redevelopment. And I know there's going to be pressure that we have to make a decision because we're going to lose some money; and they'll make a decision based on the fact that federal money is going away rather than what's the right decision.

So my question, suggestion, whatever is that perhaps because we have a process called the RAB – I have attended some of those meetings. They're inconsistent. If there's nothing to discuss at the first scheduled meeting of the month, it

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tends to get canceled for a month. It's hard to keep interest of the public going when you don't know whether you're meeting or not.

But perhaps we use that process that exists to bring in the communities and notify the interested players, not only the public officials but also the private citizens that have been working so hard, particularly PACE, and get all the players around the table and talk about alternative sites so that we all can hear it, we can all put our input in. And maybe we will come back with something that has everybody's consensus, and we can make a decision instead of going through this again in six weeks. Thank you.

ELIZABETH BODURTHA: My name is Elizabeth Bodurtha.

MODERATOR RAAB: Just one second. I think Jim Chambers –

ELIZABETH BODURTHA: Okay.

JIM CHAMBERS: First of all, we do have a RAB scheduled for March 5. It's at Building 679, 31 Quebec Street at Devens. It will be held Thursday, March 5, at 6 p.m. in the evening.

I'd also like just to say that funding is

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not an issue for this. We are not fighting time against getting money for this process. We can take the time to evaluate it, and money will be available.

ELIZABETH BODURTHA: My name is Elizabeth Bodurtha. I live at 28 Coolidge Road in Ayer. I'm a PACE member and also an Army brat.

MODERATOR RAAB: I think the recorder didn't get your name so I'd ask you to spell it for us.

ELIZABETH BODURTHA: B-o-d-u-r-t-h-a.

since the last hearing on January 8, PACE has actively reached out to local communities of Ayer, Harvard, and Shirley to offer factual information regarding this proposal and to share the concerns we have uncovered. Laurie Nehring and our technical advisors have given up formal presentations, provided editorials in local newspapers, and sent packets of information to our state and federal representatives.

At the end of the comment period, PACE will submit copies of petitions which oppose the Army's proposed site location for landfill consolidation. For the record, PACE members have collected almost

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400 signatures from Ayer, Harvard, and Shirley so far. Furthermore, most of the petitioners signed a statement that they are concerned about the adjacent Shepley's Hill Landfill which poses significant threats to the area. Shepley's Hill Landfill continues to add high concentrations of pollutions, particularly arsenic, to the waterways in and around Ayer. The petitioners request that this problem be addressed by the Army.

I have a personal comment. I would like to see AOC 40 cleaned first because Ayer's water from the get-go on June or July is going to be – it's going to be our new water. And I don't want to see that to be the last cleaned up because the potential for health risk is very – you know, it would be [inaudible]. And I would like to see all these landfills to be shipped out of town. Completely. All of them. Thank you.

FRANK MAXANT: My name is Frank Maxant, M-a-x-a-n-t. I live at 14-A William Street in Ayer.

I think as a treasurer of PACE, it's appropriate to thank the federal Environmental Protection Agency by stating for the record that

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PACE is supported by a Technical Assistance Grant from the EPA of $50,000. It's the promise of this money – we haven't seen a dime of it yet – but the promise of this money that has allowed us to hire our consultants and to anticipate being reimbursed for our personal expenses. So without that, we wouldn't be here.

The rest of my remarks are personal. I have a comment which will lead to a question; and depending upon the question – the answer to the question, rather, a suggestion.

I think it's a great idea to take all this stuff by rail somewhere else, hopefully not to somebody else's problem of course. And so I'd like to suggest in addition to the cost equation that will help make that alternative perhaps seem even more preferable to keeping it on site, there is a privately-owned landfill – in Billerica I think – called the Thomas George – or something like that – Landfill which is currently being closed under the supervision, of course, of the EPA, DEP and so on. And I've been informed that the private owner of this landfill is required to include in his cost estimates the life cycle cost of that, meaning

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that his state-of-the-art closure which uses the same material and so on presumable as ours has a life span that's attributed to it – I think maybe it's something like 50 years – after which the deteriorated material, the plastic and so on, is going to have to be replaced. And he has to calculate in his figures this cost as well as the initial cost of putting it there to begin with.

I hadn't seen this sort of thing even mentioned in any of the cost estimates that we've been seeing so far.

Now, if in 50 years the material has deteriorated and it has to be replaced, that's of more than passing interest to the Town of Ayer because that would be very shortly after we get the land back form Land Bank.. And then it will be up to us to see that the Army keeps its promises. If Land Bank keeps that same promise, it will be the first one they've kept. But let's presume maybe they do, and they do give us back this dump with a very short life span left in the plastic.

So my question is: Have I messed something here? Has this life cycle cost which includes replacing this plastic or doing whatever is required

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[1] after the plastic is no longer effective, has this
[2] been included in the cost? I haven't seen that.
[3] **JIM CHAMBERS:** The answer to your question,
[4] Frank, is no. And the reason being is that we do
[5] include the life cycle costs of long-term monitoring
[6] and identify if the cap deteriorates during that
[7] monitoring, then some sort of action would need to
[8] take place as a result of that monitoring or as a
[9] result of identifying problems through the
[10] monitoring. And the reason for that as well is
[11] that – you allude to the Charles George Landfill in
[12] Tyngsboro –
[13] **FRANK MAXANT:** Thank you.
[14] **JIM CHAMBERS:** – that landfill is a
[15] totally different type of landfill than we're
[16] describing here. And the expectation – and DEP
[17] solid waste engineers can confirm this – is that
[18] the reason for the 30-year monitoring is that there
[19] is an expectation that the landfill will become
[20] benign in that period; but you do monitor it in the
[21] event that it doesn't, in the even that there is a
[22] problem with the cap or in the event that something
[23] leeches from that landfill you are aware of. So
[24] that is the reason.

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[1] It is a proactive management of that site.
[2] It is not ignoring the site. It's not putting the
[3] site away and forgetting about it. It is a
[4] continuance monitoring of that site to ensure that
[5] these problems do not come up.
[6] **FRANK MAXANT:** So this private owner is
[7] being required by our government to assume that his
[8] plastic will fail in a given period of time. Our
[9] military owner is not being required to make that
[10] assumption. I think on the principle of what's
[11] sauce for the goose, we should require our military
[12] to make the same assumption that a private owner
[13] does about the same material and, in general, the
[14] same neck of the woods so to speak weatherwise and
[15] so on. And since I've made a similar observation to
[16] what other people – that all these fine words
[17] about human health and safety notwithstanding, cost
[18] seems to be the final all against this current
[19] proposal. If these costs are included in the
[20] estimate of putting this landfill where they are
[21] planning it right now, it will help make the
[22] off-site alternative look a lot better.
[23] So I'd like request that those costs be
[24] included, specifically in replacing the plastic if

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[1] in fact those costs are required to be included by a
[2] private owner.
[3] **LYNN WELSH:** Frank, I'd like to maybe add a
[4] little bit to what Jim Chambers has said.
[5] You refer to a private landfill owner and
[6] what he has to do to calculate his life cycle
[7] costs. One of the things that Massachusetts solid
[8] waste regulations require is that type of life cycle
[9] cost because, historically, landfill owners have
[10] really not thought past the daily operation and
[11] maintenance of a landfill. And so it is required
[12] they have the life cycle cost and have them take
[13] that money and put if in escrow so it's available if
[14] there are problems or if they have to close a site.
[15] In this case, for the Army, they are always liable.
[16] We don't have to worry unless the federal government
[17] goes bankrupt. They're not going away. They will
[18] be there if there is a new cap to replace. They
[19] will be there if there is substantial maintenance
[20] that needs to be done.
[21] In addition, they'll be following the
[22] regular sampling and testing and evaluation of the
[23] cap's integrity as everybody else will be.
[24] But the reason the life cycle cost is

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[1] usually required of a private owner is so that he
[2] has that – or he or she has that money available
[3] when there is large costs that have to be incurred.
[4] **FRANK MAXANT:** That's fine. But your
[5] answer misses the point. The point is –
[6] **LYNN WELSH:** I'll try.
[7] **FRANK MAXANT:** – the cost of replacing it
[8] is in fact a part of the cost of putting it there in
[9] the first place. And if that cost is included, then
[10] it looks bigger because it is bigger. And that
[11] means that then the comparative cost of taking it
[12] off-site would stand a better chance of looking more
[13] favorable.
[14] We're not concerned about whether the money
[15] is going to be available. We're concerned with how
[16] much money does it cost, and that cost is part of
[17] it. And it hasn't been part of those figures yet,
[18] and I think it should be. And I'm requesting that
[19] it be made part of this figure.
[20] **KATHY BORRASSO:** My name is Kathy
[21] Borrasso. I live at 122 Hazen Road in Shirley. I'm
[22] a member of the Devens Task Force, but I'm here as a
[23] citizen.
[24] As a resident of Shirley, I wish to go on

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[1] record to oppose the current landfill consolidation
[2] proposal. Based on the current inadequacies of
[3] Shepley's Landfill, the possibility of historic
[4] lagoons and high-yield aquifer, the siting of the
[5] landfill consolidation was a mistake from the
[6] beginning.
[7] I am pleased with the work of Jim Kreidler
[8] and Bill Burke and support the off-site disposal of
[9] this debris. If an off-site disposal is not
[10] feasible, then an alternative site on the Main Post
[11] should be explored. I specified the Main Post
[12] because the North Post is not an option in my
[13] opinion. Again, the presence of the aquifer and the
[14] proximity to private and municipal wells puts this
[15] area out of the question.
[16] I would also urge the Army to re-examine
[17] AOC 41, SA 12, and AOC 11. Based on these hot
[18] spots, it seems to be apparent that if there is a
[19] danger to wildlife, then there is a potential hazard
[20] to human health. It is necessary for the Army to
[21] consider the cost to the environment and quality of
[22] human life in considering the landfill options. The
[23] need for a regionally-acceptable plan is preferred.
[24] Thank you.

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[1] **CORNELIUS SULLIVAN:** Good evening. My name
[2] is Cornelius Sullivan. I live at 79 East Main
[3] Street in Ayer.
[4] I guess I take responsibility for making
[5] the big stink at the last public hearing about the
[6] disappearance of that map with all the purple. And
[7] since the panel was good enough to bring it tonight,
[8] if I could have it put back up on the screen
[9] briefly; and I'd like to ask some of the panel
[10] members some questions about that map.
[11] **MODERATOR RAAB:** While that's happening,
[12] how many other people want to make comments or
[13] questions tonight?
[14] (Pause)
[15] **CORNELIUS SULLIVAN:** My question really
[16] goes to the siting of the proposed site for
[17] consolidated landfill.
[18] As we see that map, there's black areas
[19] which represent, as I understand, the high-yield
[20] aquifers, blue areas which represent low-yield
[21] aquifers, and white areas which are not considered
[22] to be aquifers. And I'd like to direct the question
[23] to a representative of the Army, perhaps Jim
[24] Chambers from the BRAC department.

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[1] I understand that you had several criteria
[2] to pick from in choosing a site for the proposed
[3] consolidated landfill. But based on this map, which
[4] locates aquifers and nonaquifer areas, if you had a
[5] choice, where would you place – or propose to place
[6] the consolidated landfill? In the black area, the
[7] blue are, or the white area?
[8] **JIM CHAMBERS:** The answer is not a simple
[9] answer, and we've discussed our reasoning for it for
[10] the siting. We believe that the criteria used
[11] justifies the siting.
[12] **CORNELIUS SULLIVAN:** I understand it was
[13] other criteria. But I'm – my question is: If you
[14] were to limit the criteria to where the aquifers are
[15] located in showing this map, what would your choice
[16] be on behalf of the Army? Would you locate the
[17] proposed landfill in the black area, the blue area,
[18] or the white area?
[19] **JIM CHAMBERS:** Well, again, it's not that
[20] simple, sir. The fact is that even within the white
[21] area, there are Zone II considerations. There
[22] are – within the white area, there are recharge
[23] considerations that the rainfall comes down through
[24] the soil and moves from the high areas to lower

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[1] areas. The high areas generally are the low-yield
[2] aquifers. The low areas are the high-yield
[3] aquifers. So you have to consider all those
[4] things. And it's not simply is it a white, blue, or
[5] a purple area.
[6] **CORNELIUS SULLIVAN:** Well, what would be
[7] the best of those three choices? The black area,
[8] the blue area, or the white area?
[9] **MODERATOR RAAB:** I think he's answered the
[10] question twice already, and I don't know if you're
[11] going to get more out of Jim.
[12] **CORNELIUS SULLIVAN:** Actually, he's
[13] avoiding the question. I'll ask the same
[14] question –
[15] **MODERATOR RAAB:** Do you want to make a
[16] comment about where you think it should be? Maybe
[17] that would be the more –
[18] **CORNELIUS SULLIVAN:** Well, I said I have
[19] questions for the panel. If I could finish with
[20] those.
[21] I'll ask the same question of the
[22] representative from the Mass. DEP.
[23] Based on this map, aside from all of the
[24] other criteria that had to be considered, what would

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[1] be the best place to put the proposed consolidated
[2] landfill? In the black area, the blue area, or the
[3] white area?
[4] **LYNN WELSH:** Well, I think that's a leading
[5] question.
[6] **CORNELIUS SULLIVAN:** It is a leading
[7] question.
[8] **LYNN WELSH:** You'd like me to say the white
[9] area. Obviously a nonaquifer area is better than
[10] an aquifer area. But as Jim Chambers said, there
[11] are considerations for recharge. Just as you want
[12] to have problematic or threatening facilities not
[13] sited on your Zone II, the areas that contribute
[14] water to the well, you also want to have that
[15] aquifer recharged; and you want the recharge area to
[16] not contaminate the aquifer. So that it isn't
[17] simple. It isn't one place is better than the
[18] other. It's – I believe – and this is my personal
[19] opinion, not speaking for the BCT – that it takes a
[20] group of people agreeing on the criteria and then
[21] evaluating any locations blue, black, or white.
[22] **CORNELIUS SULLIVAN:** If aquifers or concern
[23] for aquifers were the criteria, am I correct that
[24] your choice would be the white area or someplace

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[1] within the white area?
[2] **LYNN WELSH:** I would have to agree with
[3] you, sir, but only if the criteria were the
[4] aquifer. But I think residents are an issue.
[5] Wetlands is an issue. Recharge is an issue. The
[6] amount of – the amount of destruction you would
[7] have to get to that location is an issue. The
[8] utilities you'd have to bring into that area are an
[9] issue. That's why there are siting criteria. If
[10] that is not the criteria people will agree on, then
[11] we add to that.
[12] But just to make aquifer location the only
[13] and sole criteria I think would be too simplistic
[14] and something that I think in the end people would
[15] find as problematic.
[16] **CORNELIUS SULLIVAN:** I'd like to pose the
[17] same question to the representative for the USEPA.
[18] **JAMES BYRNE:** I was hoping you'd forget.
[19] Again, I would echo the comments of both
[20] Lynn and Jim and –
[21] **CORNELIUS SULLIVAN:** Let me ask you assume
[22] that the only criteria to be considered is the
[23] aquifers as shown on the map.
[24] **JAMES BYRNE:** If the aquifers were the only

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[1] criteria, yes, I would probably have to agree with
[2] Lynn on that. Yes, that would be an ideal location
[3] for it. Unfortunately, it's not –
[4] **CORNELIUS SULLIVAN:** Which would be?
[5] **JAMES BYRNE:** The white area. Sorry.
[6] Unfortunately, at times it's not that simple a
[7] world, as we all know.
[8] **CORNELIUS SULLIVAN:** Thank you.
[9] **MODERATOR RAAB:** Yes.
[10] **PAUL BRESNAHAN:** Thank you very much. My
[11] name is Paul Bresnahan. I'm an Ayer selectman. The
[12] address is 21 Wright Road in Ayer. And I'd just
[13] like to make a couple of short comments. One, to
[14] clarify a point.
[15] Mrs. Nehring had a question earlier, and
[16] the answer was kind of [inaudible]; and I'd just
[17] like to repeat her question for the record, and that
[18] is for this pit so-called. The response we have is
[19] regardless of where the consolidation occurs, that
[20] pit site would be excavated to verify its removal or
[21] cleanliness?
[22] **JIM CHAMBERS:** Test pitting on that area
[23] would be done to verify the location on that site,
[24] yes.

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[1] **PAUL BRESNAHAN:** Jim, is that removing
[2] [inaudible]? I'm not an expert at that, It was
[3] mentioned earlier, before the question was asked,
[4] that it would be excavated if the new Shepley site
[5] was chosen. Mrs. Nehring's question was: Will it
[6] be excavated even if it isn't chosen? What's the
[7] difference between excavated and what you just
[8] said?
[9] **JIM CHAMBERS:** If it's found, it will be
[10] excavated. All this investigation that we've done
[11] to date has not located that site. We agree and
[12] have agreed with the DEP to pursue that. The way we
[13] will do that is by test pitting, doing small
[14] excavations in and around where that area has been
[15] identified through aerial photographs, anecdotal
[16] evidence, and historical records. And we've done
[17] borings in that area, have no evidence of that. We
[18] have groundwater monitoring wells in and around that
[19] area and have no evidence.
[20] So, yes, if we do find it, we will excavate
[21] it regardless of whether or not the consolidation
[22] area is located at that site.
[23] **PAUL BRESNAHAN:** Okay. Thank you.
[24] The second point is it was mentioned

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[1] earlier in the evening that one of the issues that
[2] may have deterred the study of the off-site
[3] shipments was the fact, perhaps from a policy
[4] perspective the Superfund – I assume at the federal
[5] level – supports on-site solutions versus
[6] off-site. I would just like to suggest we have on
[7] the record that the very significant environmental
[8] concerns we've all been discussing should be put as
[9] a precedent over and above the Superfund concern
[10] about off-site. So our concerns about the
[11] environment socially – social concerns, health
[12] concerns, and other concerns should be put far ahead
[13] of the concern about the policy about off-site. I'd
[14] just like to obviously get your support on that, but
[15] have that as a matter of record.
[16] Thank you.
[17] **MODERATOR RAAB:** Thank you for your
[18] patience. Go ahead. We'll start with second
[19] comments.
[20] **JAMES WILLIAMS:** Yes, James Williams –
[21] Jim Williams – 21 Douglas Drive, Ayer,
[22] Massachusetts. Several hopefully short questions.
[23] Early in the presentation this evening, it
[24] was mentioned that test borings have been made in

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[1] the proposed site for the consolidation to ensure
[2] that the soils were adequate to support the load on
[3] 250,000 cubic yards of material. Did that study
[4] also include what possible effects the weight of
[5] this material would have on the subsurface flow of
[6] water and how that might affect the outflow from
[7] Shepley and also from the to be constructed
[8] consolidated landfill, and has that been checked
[9] against other situations for a similar amount of
[10] weight that's placed on similar soils?
[11] **MARK STELMACK:** Mark Stelmack, ABB
[12] Environmental Services, 511 Congress Street,
[13] Portland, Maine.
[14] The geotechnical evaluation that used the
[15] information from the soil borings appears as an
[16] appendix to both the 1995 and the 1997 landfill
[17] consolidation feasibility study report. I believe,
[18] if I remember correctly, the results of the
[19] geotechnical evaluation indicated that there would
[20] be a settlement of approximately five to seven
[21] inches after the consolidation landfill was placed
[22] on the soils; therefore, the conclusion was this is
[23] considered a very relatively minimal settlement that
[24] would occur in the upper reaches – upper surface

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[1] area of the soil and would not have any impact
[2] whatsoever on groundwater flow.
[3] **JAMES WILLIAMS:** I'm glad that was
[4] addressed.
[5] The second question is that presumably
[6] whether the material is relocated on-site or
[7] off-site, you're still going to have this
[8] segregation and checking to see that there are
[9] hazardous materials, that they're treated separately
[10] and in the proper manner. Can you as part of your
[11] report or part of your plan indicate the management
[12] structure that would ensure the absolute
[13] independence of the person making those
[14] determinations – that is, the testing group – to
[15] ensure that there's no management pressure or
[16] contractor pressure or anything to let things slip?
[17] **JIM CHAMBERS:** Well, first of all, that's
[18] why we enjoy the company of the EPA and the DEP
[19] working with us on this. They are the independent.
[20] **JAMES WILLIAMS:** So they'll be making the
[21] determinations?
[22] **JIM CHAMBERS:** They oversee what we do.
[23] Yes, they do.
[24] **JAMES WILLIAMS:** But they won't be the

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[1] person who picks and sorts; right?
[2] **JIM CHAMBERS:** No, sir.
[3] **JAMES WILLIAMS:** Okay. Then my question is
[4] about the person in the pit doing the sorting.
[5] **JIM CHAMBERS:** The person that does that
[6] work is employed by the contractor who is – who
[7] wins the contract form the Army.
[8] **JAMES WILLIAMS:** At minimum bid presumably,
[9] minimum appropriate bid.
[10] **JIM CHAMBERS:** No, that's not how we do our
[11] work. And we do have requirements, and we showed a
[12] slide here this evening that show the requirements
[13] for the expertise of the individuals involved. We
[14] do require credentials be presented to us, resumes
[15] and such, and we are familiar with their
[16] qualifications in terms of whether or not they're
[17] suitable for working on this location.
[18] As well, that won't be part of this
[19] proposed plan. That is part of the design and work
[20] plan that is done when – after the decision for
[21] whatever needs to be done. This on-site
[22] consolidation or the off-site transport and disposal
[23] of these materials, that work plan comes after the
[24] decision's been made. But is will include those

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[1] specifications and requirements for individuals that
[2] have that expertise.
[3] **JAMES WILLIAMS:** I'm sorry if I addressed
[4] this earlier; but when you presented the flow chart,
[5] I thought I'd put it on the table.
[6] **LT. COL. MURDOUGH:** All right. I'll talk
[7] loud. Can everybody hear me?
[8] To answer your question, we can in the
[9] design phase consider an independent inspector,
[10] whatever you want to call to do that. We will
[11] consider that comment as part of it.
[12] **JAMES WILLIAMS:** It's a procedure that the
[13] Town uses for construction as well.
[14] **LT. COL. MURDOUGH:** We can do that.
[15] However, that individual, like the general
[16] contractor, will be contracted through the Army
[17] Corp. of Engineers, which, among other things, is a
[18] regulatory agency. So they'll have on-site
[19] professional folks verifying that the contractors
[20] are in fact fulfilling their obligations. Both the
[21] DEP and the EPA will at their convenience, at their
[22] desire be on site and be able to review and inspect
[23] anything that's going on.
[24] But the simple answer is it is something

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[1] that can be considered, and we will do it. But as
[2] Jim said, we're really a little early in the process
[3] for that. And that's one of those comments that
[4] when we review the design of the final plan would
[5] certainly be appropriate to look at.
[6] **JAMES BYRNE:** Thank you.
[7] I guess, Jim, just to follow up on that and
[8] just to restate that both EPA and DEP will be out
[9] there on a daily basis making sure things are going
[10] according to plan.
[11] And, also, as an environmental professional
[12] that's been in this business almost 15 years,
[13] decisions that are made on site on things like that,
[14] you know, carry a high amount of personal
[15] liability. In my 15 years working in this field, I
[16] really haven't met many, if any, people that are
[17] willing to stick their careers on being subjected to
[18] supposed pressure.
[19] **JAMES WILLIAMS:** I've just been on the
[20] planning board too long and had dealings with
[21] developers sometimes.
[22] **FRANK MAXANT:** Thank you. Frank Maxant
[23] again.
[24] I asked a question several weeks ago, maybe

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[1] December, at a PACE meeting; and I haven't found –
[2] heard an answer to it yet. And I'd like to restate
[3] it now, and I'll give the background.
[4] At the time of that PACE meeting, the
[5] information that had been circulated among the
[6] general public kind of characterized all of the
[7] material in these various landfills as being
[8] basically wood from stumps and so on and
[9] construction debris, concrete, bricks from
[10] construction debris, and iron and steel from
[11] construction debris. And we were being assured
[12] that, my goodness, there's absolutely nothing toxic
[13] about this material; and when we put it in a
[14] consolidated landfill, there would be no problem
[15] whatever for you.
[16] So I asked the question at a base meeting,
[17] "Well, wait a minute. If it's so harmless, what on
[18] earth is wrong with letting it stay where it is and
[19] continue composting in place just the way everything
[20] like that has since the world was formed?"
[21] Well, at that point, the quick answer was,
[22] "Oh, well, wait a minute. You know, it was much
[23] too complicated to expect the general public to
[24] understand it; but there are some toxic materials in

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[1] those landfills, and we just didn't want to
[2] complicate the issue too much by putting it in the
[3] material that we're distributing to the public.
[4] But, oh, yes, there's toxic material. We can't just
[5] let it stay in place."
[6] So it seems that regardless of the plan
[7] involved or the proposed plan or any other plan that
[8] comes up, all of this toxic material is going to be
[9] separated out and sent somewhere else.
[10] So I then restated the question; and, as I
[11] said, I haven't received the answer.
[12] I said, "Okay. Now, given that you're
[13] going to dig it up, remove, and get rid of all this
[14] toxic material, why go the $18 million or
[15] whatever was remaining [inaudible] the bulk of it
[16] and building this consolidated landfill? Why not
[17] let this wood and concrete and iron and steel
[18] continue composting in place? Can you show me," I
[19] asked, "any documentation – any documentation
[20] whatever to show that this wood and this iron and
[21] steel has in the past 70 years caused any harm to
[22] our environment or can be expected by any person
[23] with common sense and any technical expertise to
[24] cause damage to the environment in the future?"

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And I believe it was Jim Byrne who said, "Oh, yes, Frank. I can document that. I'll get you the documentation."

I haven't seen it yet.

But it seems to me unless this documentation can be produced to show that the material, if it is going to be left here – the wood, the iron, the steel, and the concrete – is going to cause some harm, that we're wasting a lot of money.

In Sunday's newspaper, the weekend magazine, the question was asked of the advice columnist, "I'd like to invent a new word. What would be a good word for a person who works very hard and does a wonderful job on a task that does not need to be done at all?"

And I'd like to suggest maybe the word "consolidator" as in landfill consolidator.

Unless we can document that this innocuous stuff that we're being assured is no trouble at all in this cell will in fact cause no harm to the environment in some way – and, frankly, if I see upstream of my drinking water well wood rotting and iron rusting and concrete turning in lime, I'm not

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very concerned at all with that. I'll drink that water very happily.

So unless you can document some kind of danger, then this whole project is an example of people working very hard doing a wonderful job on a task that doesn't need to be done at all.

MODERATOR RAAB: Do you want to pose that as a question?

FRANK MAXANT: I think that's a comment; but the question is: Where is the documentation that I was promised many weeks ago of reasonable expectation of harm to the environment from all this stuff?

JAMES BYRNE: Thanks for that comment, Frank. And, yes, I did in fact promise you that information. It's been a little bit harder to locate than I imagined. I am still working on that, and I am still promising to get it to you.

Back when you posed that question in a conversation after the meeting, I asked the question to you back then as a part of the secondary reason – okay? – outside the concerns for the toxic materials that might be potentially located in these landfills was just the characteristics of

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where many of these landfills were located.

I think you've heard a lot of concern tonight that is mostly centered around filling – filling in wetlands, the majority of these wet – the majority of land which are located in wetland areas.

And as a secondary reason for that, the human health factor that you brought up, our goal has been to remove this material that has been left in the wetlands and has damaged the function of those wetlands, i.e., wildlife habitat, flood storage capacity, cleansing drinking water supplies, things that the wetlands provide. That's pretty much the – you know, the other reason why we don't want to leave these things in place.

MODERATOR RAAB: At this point, anybody else who wants to comment or question, could you get up now so we can figure out how much more we've got here.

We've got two more? Three more?

JANET KEATING-CONNOLLY: Janet Keating-Connolly.

I just wanted to respond to I guess Frank Maxant's question and following on Jim Byrne by

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saying the materials that PACE has put together and the information that DEP and EPA provide, as well as Jim Chambers of the Army has provided to us, makes it clear that the six landfills need to be excavated, that it is a necessary thing to be done. PACE fully supports the excavation of those landfills. I just wanted to clarify that.

And if we're not getting that message across, we will do even more work.

FRANK MAXANT: May I respond?

In order to remove the toxics, you have to excavate. My question is: Why go to the trouble of building a cell and put all that clean stuff, the wood, the iron, the steel, and the concrete right back where it came from? What harm would it do?

AOBEN BROWN: My name is Aoben Brown, A-o-b-e-n. I'm from 109 West Main Street which is pretty much ground zero for the impact zone here.

My only comment is I'd like to thank Senator Durand for staying to the bitter end with us.

JAMES KREIDLER: Thank you, Jim Kreidler, Town Administrator for the Town of Ayer. Some final comments more than questions.

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As the issue that's been discussed several times this evening regarding the historic lagoons or the toxic waste or liquid waste pit, whatever is being referred to, we have located some aerial photographs of the Town of Ayer in the last couple of weeks that date June 14, 1976, in which there is clearly recognizable a black rectangular area on the site that's being proposed for the consolidated cell. And, for the record, we'd like to let you know that we have it; and we'd like to make it available for you if you'd like it. That would be one comment.

And another comment would be specific to the proposal for off-site removal. There has been some comments that's been made that one of the concerns would be what liability – future potential liability the Army would have if the materials removed to another location and then that location for one reason or another is determined to be a Superfund site, be it because of materials that the Army brought there or because the materials that the brought by another party. And, just for the record, as a comment, I'd like to offer that in discussions we've had as recent as today with the contractor

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that is in the business of doing this type of work that is an international company, they've indicated that they anticipate that as a concern and they would expect that it would be something that they would work into the details of the [inaudible] Army if they were successful bidder. [Inaudible] long-term indemnification that would be reached between the parties. So that's another comment for the record.

And another comment would be to how the – I'd said earlier regarding the issue of off-site disposal and whether or not we would just be shifting what is being our problem into somebody else's backyard. And I just would like to go on record as saying it's been our intention all along to do what is the right and just environmentally sound thing. And I don't think for a second any one of us would advocate off-site disposal and think it's appropriate to just close our eyes to where the stuff would be put just because it's not our backyard. We believe that there is an obligation arising to the level of a moral obligation that we be certain that where it's going to end up eventually is an appropriate place. Just as a

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comment.

And, finally, we're very encouraged by Colonel Murdough's statement that we should get together representatives from the Town of Ayer, from the Devens Commerce Center and from the BCT to start talking about the issue of off-site disposal and really crunch the numbers and see what can done to get an RFP together, preferable as soon as possible. It is imperative that we expedite that process, and we'll be available as soon as tomorrow if necessary to get that done.

And as a last comment, I just wanted to thank the BCT members that are on stage, Colonel Murdough specifically, sitting down front, all the representatives from federal and state offices that are here this evening, Senator Durand – as was just noted stood through the evening at this late hour – for coming out tonight, and specifically to the Army for giving us the opportunity tonight to comment.

Thank you.

COLEEN NORSTROM: I would just like to echo for the board of selectmen what Jim has just stated.

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Senator Durand, you've been fabulous. We really appreciate you, and we thank you. You always seem to be there when we need you.

And the board on stage, thank you very much. You've accommodated everything that we've asked for.

And I would especially like to thank Lynn Welsh because I understand she may not be here if we have another public hearing. And I would like everyone here to know that Lynn Welsh was one of the very first in the very beginning who accommodated the board of selectmen and came before us to explain the consolidation theory so that we understood, you know, what we were looking at.

And we thank you again.

MODERATOR RAAB: Any other questions or comments from the audience?

Any other comments from the podium?

JIM CHAMBERS: A few survivors out here.

Again, thank you for coming out this evening. This will close – unless there's any further comments, this will close – Mr. Kreidler?

JAMES KREIDLER: Very quick, Jim.

On behalf of the board of selectmen, I just

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wanted to ask a specific question around aerial photographs.

Do any of you on stage know if any aerial photographing has been done since 1976?

JAMES BYRNE: Yes.

JIM CHAMBERS: Yes.

JAMES KREIDLER: And that stuff is available? We can take a peek as well?

JAMES BYRNE: Sure.

JIM CHAMBERS: Absolutely.

JAMES KREIDLER: When was the last date, if you know?

JIM CHAMBERS: 1996.

JAMES KREIDLER: 1996, you're saying?

JIM CHAMBERS: Well, the aerial photographs, the last one that was analyzed through the epic process was 1991, but we do have more recent aerial photography as well.

JAMES KREIDLER: And what did that last photography show?

JIM CHAMBERS: Pauline, you can stand up, too.

LT. COL. MURDOUGH: Are we talking about the pit?

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JAMES KREIDLER: Let me find out.

LT. COL. MURDOUGH: You got to love engineers. All right? And I think people missed when Darrel was talking about the pit in the presentation. All right? And he said something about the elevation being changed.

We believe that that pit, whatever it was, has already been excavated. We are going to do the testing as Jim mentioned to attempt to verify that to see if we can find it. But we think it's already gone. That's why we can't find it now, why it's not showing up in anything now.

JAMES BYRNE: To further confirm that, Jim, if that's what you're getting at is the pit, we have a round of aerial photographs we believe is 1982 and the round prior to that was 1972. You have photos from '76 that I've looked at a little bit more. And we found that in the '82 photographs, the pit is no longer there.

MARK APPLEBY: '86.

JAMES BYRNE: '86. Okay. Thank you.

But it disappeared sometime in the '80s. [inaudible].

JAMES KREIDLER: Thank you.

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JIM CHAMBERS: With that, I'd like to remind everybody that the comment period ends on March 9. If you do have additional comments, please send them in on or before that date. Once we close the comment period out, we will take each and every one of the comments received both at the public hearing held January 8 and this evening, 25th of February, review, evaluate, and respond to those comments.

We do intend to use those comments to evaluate the proposal that we put forth and modify that or make a decision on whether or not we need to just do another proposal. And it depends on the magnitude and the effects of what's been proposed, and we will consider it all.

It will be responded to. Right now the date stands as May 8. That's 60 days from March 9. And we look forward to reaching that draft Record of Decision and proceeding to a Record of Decision that will be suitable to meet the goals as best we can for everyone here.

Thank you.

(Whereupon the proceedings were adjourned at 10:45 p.m.)

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CERTIFICATE

I, William J. Ellis, Registered Professional Reporter, do hereby certify that the foregoing transcript, Volume II, is a true and accurate transcription of my stenographic notes taken on February 25, 1998.

William J. Ellis
Registered Professional Reporter

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Volume I
Pages 1 to 33

Public Meeting on Revised Proposed Plan
for SAs 6, 12, and 13, and
AOCs 9, 11, 40, and 41

U.S. Army Reserve
Forces Training Area
Devens, Massachusetts

MODERATOR: Greg Sobel

Held at:

Devens RFTA Conference Center
Building 623, 42 Givry Street
Devens, Massachusetts
Thursday, December 10, 1998
8:10 p.m.

(William J. Ellis, Registered Professional Reporter)

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PROCEEDINGS

MODERATOR SOBEL: This is the formal public hearing. And as Lt. Col. Murdough and other speakers have indicated, we're eager to hear your comments; and we invite you again to come to the mike and offer those comments.

In addition to speaking tonight, or instead of speaking tonight, you can submit your comments in written form. And there is a form that you can use that's on one of the tables near the entrance. You can return the form to us tonight or send it in by January 11.

Is there anything else about the commenting process that we should let people know about, Colonel?

LT. COL. MURDOUGH: You don't have to use the form.

MODERATOR SOBEL: You don't have to use the form. You can put it on any piece of paper. As the Car Talk guy says, you could do it on a twenty dollar bill I suppose; but the regulators couldn't accept that.

JAMES CHAMBERS: I just would mention that the public hearing is a matter of public record, so,

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please, when you come to the microphone, if you could say your name and your address, your street address, as well as the town you live in so that the stenographer can record that, please.

THE REPORTER: If I may, could you also spell your names when you come to the microphone, please.

MODERATOR SOBEL: Are there any comments?

JOHN BALCO: My name is John Balco – B-a-l-c-o – 207 Green Road, Bolton, Massachusetts.

A follow-up question regarding my question regarding surface. I guess I'm starting to put words with meaning, and I guess I'm going to interpret the meaning.

If the surface – there's going to be removal of man-made objects to three feet. If there's man-made stuff there below three feet, will that be removed also?

MARK APPLEBY: The short answer is no. What's visible on the surface – if you walked out there today, anything that's visible would be picked up. If there were objects that were larger than three foot, they would be excavated down to that

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three-foot level.

Say a telephone pole sticking up out of the ground would be removed to that three foot; or, if it's easier, it would be removed completely. But things that you see below that would not be removed.

MODERATOR SOBEL: Jim Byrne.

JAMES BYRNE: Well, I'd just like to clarify that, too, Mark.

Obviously, if we're digging down, John, and we see something like, you know, your prototypical 55-gallon drum, that might lead us to believe that there's more there than just concrete or telephone poles and stuff. Then that obviously would be excavated.

And it probable needs to be mentioned, too, that while the Army is doing these investigations, they're going to be doing a fair amount of sampling to characterize this material as it comes up.

So, again, if that sampling – which will probably be done at an on-site laboratory for quicker turnaround as these excavations occur – that sampling, as well as the visual and olfactory and stuff like that, indicates any hazardous material, then those landfills will, in fact, be

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[1] excavated until I guess they reach clean man-made
[2] material.
[3] **MODERATOR SOBEL:** John.
[4] **JOHN REGAN:** One more clarification on
[5] that.
[6] The method of removal will be detailed in
[7] the future work plans when we get to the design
[8] phase of this.
[9] **MODERATOR SOBEL:** Next.
[10] **JIM KREIDLER:** Good evening. My name is
[11] Jim Kreidler, K-r-e-i-d-l-e-r, I'm the Town
[12] Administrator in the Town of Ayer, One Main Street,
[13] Ayer, Massachusetts; and on behalf of the Ayer Board
[14] of Selectmen, my comments will be brief.
[15] First and foremost, our thanks to the
[16] regulators and to the Army for all of the work
[17] that's gone into this proposed plan. A year ago, we
[18] were all dealing with the same issue; and I don't
[19] think one of us would have imagined the amount of
[20] work that would have been undertaken in the last
[21] year, and I think we're all appreciative of where we
[22] are today. So a note of thanks first.
[23] The Town of Ayer supports the proposed plan
[24] and has as its clear preference the off-site removal

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[1] of the materials. That needs to be made very
[2] clear.
[3] The only other point that I would offer is
[4] to note that in the proposed plan, it is referenced
[5] that the two proposals, on-site and off-site, will
[6] be evaluated against one another and what is
[7] determined to be the best value will be the option
[8] that is selected.
[9] And the Town of Ayer, through its board of
[10] selectmen, is very interested in participating to
[11] the extent that is allowable under the law in
[12] determining what definition is used for the term
[13] "best value." And we look forward to working with
[14] the Army and the regulators – again, to the extent
[15] permitted by law – in defining that term.
[16] Thank you.
[17] **MODERATOR SOBEL:** Thank you.
[18] **JAMES CHAMBERS:** I'd just like to say that
[19] the Army is very much interested in your input, and
[20] we'll see what can be done within the constraints of
[21] the acquisition laws for your participation.
[22] **MODERATOR SOBEL:** Bill.
[23] **BILL BURKE:** My name is Bill Burke,
[24] B-u-r-k-e, I'm here tonight to represent my role as

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[1] Executive Director of MassDevelopment. I also would
[2] like to thank everybody that's been involved in
[3] getting us where we are tonight. To reiterate Jim's
[4] point, a year ago, I think many of us that are here
[5] tonight didn't believe we'd be at this point.
[6] I'd especially like to recognize
[7] Col. Murdough. I think it's been through his
[8] leadership and efforts that the concerns of the
[9] public have been heard and responded to; and it's
[10] been a year-long process to get us to tonight.
[11] We also appreciate the concern and
[12] cooperation of Jim Chambers; John Regan at DEP; Jim
[13] Byrne at EPA; Mark Appleby and the other folks from
[14] the Corp.; PACE, who is well represented here
[15] tonight, has been a leader in trying to get us where
[16] we are tonight; the RAB members, that meeting that
[17] goes on every month that sometimes is well attended,
[18] and sometimes it isn't; the town officials; and
[19] everybody else that's been involved.
[20] MassDevelopment supports the proposed plan
[21] before us tonight. It is the result of numerous
[22] monthly and weekly meetings with the groups
[23] mentioned. These sessions reviewed – and I was at
[24] many of them – all the public comments and

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[1] analyzed the alternative sites in very significant
[2] detail.
[3] The dual ROD sponsored by the Army, EPA,
[4] and DEP which will result from this plan is really a
[5] flexible and creative approach. I think Jim Byrne
[6] said that this may be a first. And I think it shows
[7] their willingness to find the best possible
[8] solution.
[9] Our definite preference, like Jim said, is
[10] for the off-site solution. I think this best meets
[11] the objectives of the surrounding towns and
[12] MassDevelopment.
[13] The Army and MassDevelopment, as I said
[14] earlier, negotiated the solution to the land
[15] required for the possible on-site alternatives
[16] whereby the Army will give value for that land, and
[17] MassDevelopment has agreed to put up two million
[18] possible for the off-site solution.
[19] Again, this is done providing what we think
[20] was the best apples-to-apples comparison of the cost
[21] of off-site versus on-site.
[22] The Army states in the plan that the chosen
[23] disposal option will be selected based upon the best
[24] value. Jim and I are just following each other.

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here.
We request that MassDevelopment representatives from the communities be allowed to participate with the Army to the extent allowed by law in the formulation and the evaluation of the definition of best value.
Thank you, gentlemen, for your time tonight; and I look forward to working with you to the final landfill solution.
MODERATOR SOBEL: Thanks.
Bill's mentioned, and others tonight have mentioned, the RAB. That's the Restoration Advisory Board. It meets the first Thursday of each month for years now and for the forseeable future to review a wide range of environmental issues related to these properties. And those are open meetings, and you're welcome to attend.
If you'd like to learn more about it, you can speak with any of the panel after the meeting.
Other comments?
Looks like a, no, after you. No, after you.
LAURIE NEHRING: I'm Laurie Nehring, and I will be giving a copy of my comments. I'm in 35

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Highland Avenue, Ayer, Massachusetts.
I'm the president of PACE, and I've prepared some formal comments.
In preparation for this public hearing tonight, I reviewed briefly PACE's landfill consolidation files which are saved on my hard drive. I reviewed notes from meetings, and I glanced over the many, many Army reports which occupy a large part of my family's dining room.
It's been a year filed with in-depth research, education and outreach, and lengthy discussion with the Army in which new perspectives were presented by the various stakeholders. This led to hard and sometimes contentious negotiations in which all sides needed to give a little in order to move forward.
PACE is very pleased with the level of involvement from towns, from environment advocacy groups which are represented here tonight, from our elected officials, and from individual citizens.
We also deeply appreciate the very hard work that was done over the last year and especially in the last few months by the Army's BRAC Office directed by Jim Chambers, by Jim Byrne with the EPA,

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by John Regan with MADEP, and by many people with MassDevelopment including Ron Ostrowski and Bill Burke.
There was never a disagreement over the predominant goal. We all agreed that these landfills formerly used by the Army are impacting environmentally-sensitive areas on Devens and do need to be cleaned up.
PACE is very pleased to support the revised proposed plan for SAs 6, 12 and 13, and AOC 9, 11, 40 and 41 under discussion tonight. Comments and concerns submitted by the public have been incorporated into the revised proposal for the landfill remediation at Devens. In addition to this incorporation, we really love the new map; and we appreciate your efforts in making the sites more recognizable and understanding to the general public.
This map illustrates more precisely the location of each of the seven landfills which are scattered throughout Devens, landfills located in Shirley, in Harvard, and in Lancaster.
We are pleased that the new proposed location for landfill consolidation, if it goes

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on-site, is more centrally located within the former base and is not located on anyone's aquifer.
This does not infer that we prefer the on-site alternative. We do not.
I would like to take this opportunity to reiterate some of the concerns related to the remediation of these old Army landfills, most of which have been addressed by the revised plan.
Number one. The landfill siting and its relation to drinking water sources.
In the 1997 proposal, PACE was primarily concerned about the proposed siting of the landfill – of the consolidation landfill over a highly-productive aquifer in a high transmissivity zone, near the Town of Ayer's Grove Pond wells.
We are very pleased that the proposed landfill site near Shepley's Hill is no longer under consideration and that the selected site is not on anyone's aquifer.
Number two. Testing of waste.
PACE was concerned about the possibility of inadequate chemical testing which is essential in order to determine if excavated materials or soil is hazardous and should, therefore, not be placed in

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the proposed solid waste landfill, particularly at the formerly proposed Shepley's Hill location.

With the current proposal, the Army has agreed to perform necessary on-site and off-site laboratory testing to determine the hazardousness of excavated materials before sending them for disposal. This should include field screening techniques to determine if particular lots of excavated materials are likely to be contaminated.

In addition to visual inspection, for example, an HNu or similar instrument would be used to test for organic vapors, and an X-Ray Fluorescence (XRF) spectrometer could you used to test for materials – for metals. Materials that screen as contaminated should be sampled and samples sent to an off-site laboratory for additional TCLP or Toxicity Characteristic Leaching Procedure testing.

This will be more adequately separate out excavated materials which should be disposed of in a hazardous waste landfill rather than a solid waste landfill.

Number three. The Cleanup of AOC 11. PACE, along with many others, recommended

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that AOC 11, the Lovell Road Debris Disposal Area, be included in the full restoration rather than the more simple surface debris removal proposed earlier.

The Army's current proposal, Option 4C, does include complete cleanup of this landfill. We applaud the Army for making this decision and acknowledge the additional cost to the Army, which I understand is about $4 million. We appreciate that.

Number four. Off-site disposal. PACE supports the concept of off-site disposal of landfill wastes. We appreciate the Army's willingness to allow the consideration of off-site disposal under the two-headed or dual-ROD approach. PACE supports off-site disposal if the cost is not unreasonably higher than the on-site alternative and if it provides the Army with the best value as was described by Col. Murdough at the October RAB meeting.

We also support the inclusion of the folks that would like to be included in the determination of the definition of best value.

Number five. Recycling.

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In the comparison of formal bids received by the Army and evaluating, quote, best value, PACE requests that the Army give consideration to bidders which include recycling during the remediation process. Recyclable materials such as metal and glass appear to make up a large portion of these landfills and ideally should be screened out of the landfill contents and recycled. This is not only better for the environment but may offer prudent savings as it minimizes the size of an on-site consolidation landfill, or the amount of waste that must be sent off-site.

Six. The order. Which landfill will be cleaned up first?

Due to the potential for impact on the drinking water sources for Devens at the Patton well, and the Town of Ayer, through Cold Spring Brook which feeds the Grove Pond wells, we strongly urge that AOC 40 be the first landfill to be remediated. This is particularly urgent as the demand for water on Devens and in the town of Ayer has increased dramatically in recent months and continues to grow.

And, finally, Number 7, Shepley's Hill

Page 16

Landfill.

When the consolidation landfill was proposed to be located near Shepley's Hill Landfill, PACE was led to study in depth the remedial efforts and problems at Shepley's Hill Landfill.

Shepley's Hill Landfill is an 84-acre Army landfill which abuts Plow Shop Pond in the town of Ayer. It is the second largest landfill in the state of Massachusetts. PACE raised the issue of arsenic contamination of groundwater, apparently caused by the Shepley's Hill Landfill. We continue to be gravely concerned about the impacts of contaminated groundwater on nearby ponds and waterways which flow through Ayer's residential neighborhoods.

Based on PACE's review and critique of the recently released five-year review for long-term monitoring at Shepley's Hill, we believe that the Army's current remedial approach is failing and that active remediation is necessary. Studies currently underway at Shepley's Hill should be speeded up so that a pump-and-treat system can be installed as quickly as possible, thus removing arsenic contamination from the groundwater which flows into

Page 17

the waterways through Ayer and on to the Nashua River.

We thank you very much for all your efforts and thank you for allowing us to speak tonight.

MODERATOR SOBEL: Thank you.

JAMES CHAMBERS: I'd just like to thank Laurie for her participation as the president of PACE. Their contribution is very important to this effort.

HEIDI RODDIS: Good evening. For those of you who don't know me, my name is Heidi Roddis, R-o-d-d-i-s; and I represent a couple of different groups. I work for Massachusetts Audubon Society, and I'm also on the Town of Shirley – The Conservation Commission. And I am a member of the Restoration Advisory Board. So I've been following this whole planning cleanup process both for the landfills and for other sites for a number of years now, and it's been interesting to see how it has evolved.

I, too, want to thank the Army, the EPA, DEP, and everybody involved on the BRAC Cleanup Team for all of the efforts that they put into responding to new information, to comments from the community,

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and from comments from others throughout the process.

And as a result of this process, we're at a point where several years ago, there was a discussion about, you, know, should any of these landfills be cleaned up at all or just sort of capped and placed and left where they are, even though a lot of them are in floodplains and low-lying areas in contact with groundwater.

We're now at a point where at least the majority of them are going to be excavated and put in a location, either on-site or off-site, that's not siting over somebody's drinking supply aquifer and not in contact with any groundwater, not in a surface water body.

So we still – you know, the Army still has a lot of work to do on details, how they are going to screen the materials as they're excavating, is it going to go on-site or off-site. Then there will be continuing issues not only at these landfills but at a number of other sites all around Devens for many years to come, I'm sure.

You know, it was an Army base for 75 years; and we don't know that everything has been found

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yet. It probably hasn't.

But I think the people who have been working on this deserve to be commended for the work they've done to address the issues the very best they can with the information they have and recognizing that the financial resources are not infinite.

Congress is faced with cleaning up military bases all over this country; and, inevitable, they have to set priorities. And while I certainly would like to see every ounce of contamination removed and shipped somewhere else where it's not near anyone, the fact is that that's not possible. And if it was shipped somewhere else, it might be in someone else's backyard.

So, you know, I don't have a clear preference as to on-site versus off-site disposal at this point because the on-site site is no longer over an aquifer. But I think that as you look at, you know, what's the best option, we need to consider sort of total environmental protection issues for towns here or the towns in between or the towns where it's going.

And, in particular, in closing, I want to

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thank the Army for agreeing to excavate Area of Concern 9 which at one point in time was proposed to be left in place and is now going to be removed – and that's over the aquifer that feeds Shirley's wells – and Area of Concern 11 which is on the banks of the Nashua River.

And for several of these landfills, we have some potential for wetlands and floodplain restoration. So please see a project where we're not only trying to protect wetlands from addition damage but actually trying to go back and restore some of these resources that we've lost over time.

So thank you and keep up the good work as we move forward.

MODERATOR SOBEL: Thank you. Yes, sir.

DAVID RODGERS: My name is David Rodgers, R-o-d-g-e-r-s. I live at 85 Highland Street in Lunenburg.

I actually have two questions, and I'd like to direct the first question to the EPA and the DEP representatives and hope that they will be able to give us their indication relative to the proposal; and, frankly, from my standpoint, I look to them to

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[1] be the check and balance, and, hopefully, they'll be
[2] able to soothe any ruffles and to make us all feel
[3] comfortable that the plans under consideration meet
[4] appropriate standards and, frankly, are the things
[5] to do. So that's my first question.
[6] **JAMES BYRNE:** Again, Jim Byrne from EPA.
[7] I would just like to say that I have
[8] personally, and my agency, also, has been involved
[9] in every detail of the cleanup here on Fort Devens
[10] and, in particular, this landfill.
[11] And regarding this proposed plan, we feel
[12] that it's a remedy that's protective of human health
[13] and the environment, which is our No. 1 mission.
[14] We also feel that this proposed plan meets
[15] a number of the community concerns we've heard.
[16] And, as a secondary goal, it also supports the
[17] successful redevelopment of Fort Devens.
[18] So as a whole, we think it's a great step
[19] forward for the cleanup of Fort Devens and as well
[20] as for the redevelopment.
[21] **JOHN REGAN:** John Regan from DEP.
[22] We also see this plan as fulfillment of a
[23] lot of work, and we believe either of the options
[24] included in this totally protects of human health

Page 22

[1] and the environment; and we will continue to work
[2] with the Army to attain a full cleanup of Devens.
[3] **DAVID RODGERS:** The second question I have
[4] deals with what if. If the plan that is selected is
[5] implemented, and if after a period of time it's
[6] determined that additional remediation should be
[7] done, what kind of indemnification will there be
[8] provided by the Army to ensure that this issue will
[9] be taken care of?
[10] **JAMES BYRNE:** Well, under our – Jim Byrne
[11] from EPA again.
[12] Under our Superfund statute, the federal
[13] government is on the hook basically I guess for as
[14] long as the world exists. So if any remediation is
[15] found here in the future after the Army is gone,
[16] they would be responsible to come back and take care
[17] of it.
[18] **DAVID RODGERS:** Thank you very much.
[19] **JAMES CHAMBERS:** I just add to that that
[20] it's under CERCLA 120(H)(3) and (4) that the Army
[21] indemnifies the property. And that indemnification
[22] is written into the deed, and – I don't know the
[23] property terminology, but it follows the deed. So
[24] once the Devens Commerce Center takes control of the

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[1] property, then they sell it, the Army still
[2] indemnifies that property.
[3] **MODERATOR SOBEL:** Yes, ma'am.
[4] **SUSAN MORIN:** My name is Susan Morin. I
[5] live at – last name is Morin , M-o-r-i-n. I live
[6] at 70 Pleasant Street in Ayer, and I just have a
[7] question regarding the landfills.
[8] In either case, when the four landfills on
[9] the northern section are excavated, is there still
[10] going to be some type of monitoring program
[11] conducted at those sites to make sure that the
[12] groundwater contamination doesn't continue to go
[13] out?
[14] **JAMES CHAMBERS:** First of all, the
[15] investigations that we've conducted indicate that
[16] there is no significant groundwater contamination.
[17] The reason we are removing these landfills is to
[18] preclude any future groundwater contamination.
[19] So by removal of these landfill – and
[20] confirmatory sampling will be done upon removal
[21] to – and that is to take samples of both the
[22] groundwater and the soil at these sites to confirm
[23] if there is presence of any hazardous substances.
[24] And once that's done, we don't envision future

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[1] monitoring of those sites.
[2] **MODERATOR SOBEL:** Are there other
[3] comments?
[4] Yes, ma'am.
[5] **ROBIN CHILDS:** My name is Robin Childs, and
[6] I'm speaking on behalf of Senator Robert Durand,
[7] D-u-r-a-n-d, Room 109C in the State House, Boston,
[8] Mass.
[9] I just want to pass along the Senator's
[10] regrets that he couldn't be here this evening, but
[11] today he was officially appoint – well, announced
[12] as the governor's appointee for the Secretary of
[13] Environmental Affairs; and he's unavoidably
[14] detained.
[15] I just wanted to pass along a couple of
[16] comments basically reiterating some of the
[17] statements that we've made formally over the last
[18] year. And, again, we will submit formal comments
[19] this evening. This is rough. I didn't have a
[20] chance to prepare anything formal so just three
[21] things.
[22] First, we wanted to commend the Army, state
[23] and federal regulators, and all the stakeholders who
[24] have been voicing concerns in this process for

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[1] drafting a plan that is a vast improvement over the
[2] former plan, particularly we are pleased about the
[3] inclusion of AOC 11 and the plan to fully remediate
[4] four sites.
[5] And we also are very pleased with the
[6] contingency ROD process that's created. It's
[7] potentially going to create a solution that everyone
[8] can be happy with.
[9] And we also are very pleased that Shepley's
[10] Hill has been removed from consideration because it
[11] was of such concern to the Town of Ayer.
[12] We would like to reiterate as well that in
[13] the process as this proposed plan moves forward
[14] towards a Record of Decision, we ask, as we have
[15] before, that you continue to weight the concerns of
[16] the community in your heirarchy of decision making
[17] on what is the best alternative, to continue to
[18] weight the community concerns at the very highest
[19] level.
[20] And I had one other thing.
[21] The definition of best value for the
[22] community concerns be weighted very heavily.
[23] And as a final comment – actually, no.
[24] I'll save that for something else. It's not really

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[1] of concern. Thank you.
[2] **MODERATOR SOBEL:** Thank you.
[3] **RALPH GIFFORD:** My name is Ralph Gifford.
[4] G-i-f-f-o-r-d, from the Lancaster Board of Health.
[5] Thank you for the opportunity to comment.
[6] I noticed on Page 13 of the report that the
[7] cost for Alternative 4C, 20.2 million, was the same
[8] as the estimated cost for Alternative 9 which
[9] included excavation and consolidation of all seven
[10] landfills.
[11] Given that that cost estimate is the same,
[12] I was wondering why the landfills in the South Post,
[13] especially SA 12 and AOC 41, were not included in
[14] that excavation and consolidation.
[15] SA 6 I don't have any objection to that
[16] remaining there. That's pretty ancient and does
[17] seem to have some archeological interest. But the
[18] other two, if the cost is the same, it would seem to
[19] me to be prudent to just be done with it. You're
[20] already going to be removing surface debris. Just
[21] go a little bit further. It appears to be not much
[22] additional effort. Be gone. And then the
[23] monitoring costs will be reduced, and I suspect the
[24] long-term costs will be less; and Lancaster will

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[1] certainly be happier. Thank you.
[2] **JAMES CHAMBERS:** Well, as it's been
[3] described here, it's been a long year since we
[4] initially made the proposed plan for the excavation
[5] consolidation.
[6] Well, when we came to the realization that
[7] it would be best to excavate AOC 11, we went back
[8] and we did a more detailed evaluation and estimate
[9] of what the cost would be for that. And as that was
[10] mentioned, it was a $4 million increase. And our
[11] focus from that – from this past year as been to
[12] further define the Alternative 4, and we did not go
[13] back and go through the others.
[14] So, unfortunately, Alternative 9 was not –
[15] we did not adjust the figures in that. So we would
[16] need to fully address that. Under that, it would be
[17] another four or five million dollars to that
[18] proposal so that would be – all right. I'm being
[19] consulted here as we speak so.
[20] It would be about another $2 million
[21] actually. And Item 6 would increase by about
[22] another million dollars on Proposal 6.
[23] **RALPH GIFFORD:** Do we have an estimate on
[24] the cost of the long-term monitoring? With the

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[1] additional $2 million expense would – the cost of
[2] monitoring for many years to come?
[3] **JAMES CHAMBERS:** I would ask you to return
[4] to the microphones, please.
[5] (Pause)
[6] **RALPH GIFFORD:** Are we better off spending
[7] $2 million now and eliminating the long-term
[8] monitoring costs? Would they offset?
[9] **JAMES CHAMBERS:** Well, see, at AOC 41, we
[10] already have the long-term monitoring costs for that
[11] site. That's as I mentioned, is being accomplished
[12] under another Record of Decision for that site.
[13] Under Superfund terms, we work in what's
[14] called operable units. And groundwater operable
[15] units is managed under that other Record of
[16] Decision. Solid waste operable units is what we're
[17] discussing here.
[18] So that the environmental issues there.
[19] while there are solid waste issues, we believe we're
[20] addressing those through what we propose. The
[21] groundwater issue, again, is being managed under the
[22] other Record of Decision.
[23] On Study Area 12, the monitoring that's –
[24] that will be done there is – has been agreed by the

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Massachusetts Department of Environmental Protection that they would accomplish that monitoring at no cost to the Army because they already have a monitoring program that they will be engaging for the Nashua River through that area.

MODERATOR SOBEL: Yes, ma'am.

ALEXANDRA TURNER: I'm Alexandra Turner, T-u-r-n-e-r. I'm from the Lancaster Board of Selectmen.

In my mind is more a question than a comment; but in your ecologic – in your literature on Page 9, your ecological risk summaries state that SA 12 and AOC 41 – SA 12 exceeds ecological benchmark values and AOC 41 poses a potential wildlife risk – or I should say potential wildlife risks exist at AOC 41 due primarily to exposure to inorganics in surface soil.

I know one of the CERCLA requirements is protecting human health as well as that of the environment. Where do you draw the line? When do the ecological risks cross into the community, and how do you quantify that?

MARK APPLEBY: First – my name is Mark Appleby, the Army Corp. of Engineers. And first

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off, I just want to say I'm no risk assessment specialist by any stretch of the imagination.

But to try to address, first, AOC 41 with regard to the surface soils, the surface removal that we planned will take care of those surface soils. New soil will be brought in, and that area will be regraded. Therefore, the exposure to surface soil will be eliminated by the proposal that we have in place.

For SA 12, there were exceedances of some ecological benchmarks, screening values, which are conservative values, that are used to do an initial screening to see if there might be a significant risk.

One of the major things with SA 12 is that within the Nashua River itself, there were several exceedances that were even higher than the exceedances at the landfill itself.

So the question has always been whether or not the river is contaminating the landfill or the landfill is contaminating the river.

The significance of those exceedances at the landfill proper were not deemed significant enough as part of the risk assessment.

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We can give you more detailed response to that in the formal response to comments. That's as far as I can take it.

JOHN REGAN: I'd like to add one thing about AOCs 12 and 41.

Although the proposed plan describes a surfacial cleanup, surfacial debris is mainly what you have on both of those sites; and the surfacial removal is going to take care of most of this.

MODERATOR SOBEL: Are there any other comments?

I have a comment. It's mostly an expression of appreciation. I want to thank you all for your participation. Not just in this meeting but for your involvement in this important set of issues here over the past months and, actually years; and for participating in such a constructive fashion.

Your constructive approach mirrors the activities and the style of the agencies and the Army in dealing with these problems. The U.S. Army, the EPA, the DEP have worked in an exceptionally collaborative fashion on these very, very tough issues for quite a long time; and I think they knew

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they had your support, but they were still very, very tough issues. And I just want to acknowledge that, congratulate all you in this room, and urge you to keep up the good work.

Are there any other final comments for the evening?

(Pause)

MODERATOR SOBEL: Well, then, thanks again for joining us tonight; and we'll probably see you in the future. Have a good evening and good holidays, everybody.

(Whereupon the proceedings were adjourned at 8:48 p.m.)

C.4 Written Public Comments

JOHN E. SUNUNU
1st District, New Hampshire

COMMITTEE ON THE BUDGET

COMMITTEE ON GOVERNMENT REFORM AND OVERSIGHT

COMMITTEE ON SMALL BUSINESS

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35 Center Street
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January 22, 1999

Mr. Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

RE: Proposed Plan for Closing Landfill Sites at Fort Devens Army Base

Dear Mr. Chambers,

Recently I received correspondence from the New Hampshire Department of Environmental Services concerning the closure of seven landfill sites at Fort Devens and the possible disposal of the debris from those sites at an offsite location.

It is my understanding that current estimates indicate that offsite debris disposal is significantly more costly than onsite consolidation and that offsite disposal would negatively impact already diminishing capacity at state-of-the-art landfills in Massachusetts or neighboring states including New Hampshire.

I would appreciate your keeping me informed of any developments in this matter as the deliberation process moves forward. Thank you for your assistance.

Sincerely,

John E. Sununu
Member of Congress

JFS/pk

OPTIONAL FORM 99 (7-90)

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To Mark Stelmack	From Barbara
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COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL PROTECTION
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Central Regional Office, 627 Main Street, Worcester, MA 01608

ARGEO PAUL CELLUCCI
Governor

JANE SWIFT
Lieutenant Governor

BOB DURAND
Secretary

DAVID B. STRUHS
Commissioner

January 8, 1999

Mr. Jim Chambers
BRAC Environmental Office
30 Quebec Street
Box 100
Fort Devens, MA 01432

Re: Proposed Plan for SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41, US Army Reserve Forces Training Area, Devens, MA (November 1998)

Dear Mr. Chambers,

The Massachusetts Department of Environmental Protection (MADEP) has reviewed and concurs with the proposed plan for the Devens landfill remediation. The MADEP believes both off-site disposal and on-site consolidation are equally protective of human health and the environment. Therefore, we support the selection of that remedial option which provides the best value to the public.

The MADEP thanks the Army for its perseverance in evaluating the multiplicity of remedial options and its demonstrated commitment in considering the desires of the public in the development of this plan. We look forward to the Record of Decision and final remedy selection for these sites and are prepared to monitor conditions at SA 12 as part of our Nashua River Basin monitoring program.

Sincerely,

Robert W. Golledge Jr.
Regional Director
CERO

P:\JREGAN\LFPPCON
cc: Informational Repositories
Fort Devens Mailing List
Joe Pierce, Fort Devens
Jim Byrne, EPA
Jeff Waugh, AEC
Patricia Plante, ABB
Mark Applebee, ACOE
Ron Ostrowski, Mass Land Bank
Deborah Gevalt, Haley & Aldrich

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Nashua River Watershed Association

592 Main Street, Groton, Massachusetts 01450-1230
Tel: 978/448-0299 Fax: 978/448-0941
E-mail: nrwa@ma.ultranet.com

January 8, 1999

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Lancaster, MA

Vice President
Paul Matisse
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Harvard, MA

Executive Director
Elizabeth Ainsley Campbell

Mr. Jim Chambers
U.S. Army Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Dear Mr. Chambers:

The Nashua River Watershed Association (NRWA) has reviewed the U.S. Army's "Proposed Plan" for the clean up of the seven landfills at Devens, MA – SA's 6, 12, and 13, and AOC's 9, 11, 40, and 41. Of the 12 alternative actions considered by the Army, the NRWA agrees that Alternative 4c is the best choice to reduce future environmental and human risk. Therefore, we support the selection of Alternative 4c.

The landfill remediation process at Devens has been a long one, and at times divisive. However, the choice of the 4c as the preferred alternative indicates that the decision makers – the U.S. Army, USEPA, and MA DEP – have listened and taken into account community concerns. We commend you all for this.

Sincerely,

Elizabeth Ainsley Campbell
Executive Director

cc: Board of Selectmen, Town of Ayer
Board of Selectmen, Town of Harvard
Board of Selectmen, Town of Shirley
Board of Selectmen, Town of Lancaster
Senator Edward Kennedy
Senator John Kerry
Representative Martin Meehan
Environmental Secretary Robert Durand

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Fruitlands Museums

102 Prospect Hill Road C Harvard, Massachusetts 01451
Tel. (978) 456-3924 C Fax (978) 456-8910 C E-mail: fruitland@ma.ultranet.com

December 21, 1998

Mr. Jim Chambers
U.S. Army, Reserve Forces
Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Dear Mr. Chambers:

As Curator at Fruitlands Museums, I urge you to reconsider your treatment proposals. The presence of heavy metals, semi-volatile and volatile organic compounds as well as PCB's in the soil, sediment, surface water and groundwater at SA 12 and AOC 41 (and other sites) is very disturbing, not only for their proximity to the Fruitlands' property, but also for their location within the Nashua River floodplain. Unless there is some way to contain or clean up these contaminants, they will surely impact the wildlife of the area, and potentially, be washed downstream in the Nashua.

The expected future use of the area may reassure you that these contaminants are contained within acceptable parameters. We, however, are less optimistic. Your proposed solution raises many questions that must be adequately addressed:

- What type of stewards are we if a wildlife sanctuary and its adjacencies are allowed to contain such hazardous materials?
- Where do the contaminants in the river originate?
- Will they be cleaned up?
- How old are the deposits?
- Can you truly absolve the US Army of any connection to these river-born contaminants?
- How will you mitigate the potential health risks?

The decisions made on this land today will affect the heath of this region in the future. I sincerely hope that these sites are cleaned to a level that no longer impacts wildlife or human populations well into the future. Specifically, I urge you to adopt procedures described in Alternative 9 as outlined in the proposed Superfund Program Plan.

Sincerely yours,

Michael A. Volmar, Ph.D.
Curator

cc Senator Robert A. Durand

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DEC 22 1998

Jim Chambers
U.S. Army, Reserves Forces
Training Area
BRAC Environmentla Office
30 Quebec St., Box 100
Devens, MA 01432-4429

January 6, 1999

re: Proposed Plan for Sas 6, 12, and 13 and AOCs 9, 11, 40, and 41

Dear Mr. Chambers:

In reviewing the publication outlining the closing of dumps on Fort Devens, I do not see any references to recycling. Although it is commendable that the dumps will be relocated to lined and capped sites, it seems that instead of simply transferring materials, an effort is made to recycle, especially in regards to glass, stumps, and metals. Also an effort should be made to identify any liquids on site and neutralize them.

Thank you for your anticipated attention to this detail.

Yours truly,

Sarah MacLennan
11A Mt. Laurel Ln.
Lancaster, MA 01523

cc: Lancaster Board of Selectmen
Lancaster Land Trust

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Use This Space to Write Your Comments

The Army wants your written comments on all of the options under consideration for dealing with the landfills at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. You can use the form below to send in written comments. If you have questions about how to comment, please call the Devens BRAC Environmental Coordinator, Jim Chambers, at 978/796-3835. Send this form, or any other written comments, postmarked no later than January 11, 1999 to:

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429
Fax 978/796-3133

My prefenence is for AOC 11 to be excavated as planned. The most responsible thing for the Army to do would be to restore AOC 11's wetlands so they function similarly to how they did before the dumping occurred. Please consider recycling materials in these landfills. Thanks for your thoughtful consideration of our preferences.

Comment Submitted by: Bob Burkhardt

Address: Robert Burkhardt
12 Harvard Rd. #10
Shirley, MA 01464-2433

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DEC 21 1998

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

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RESIDENT
RURAL ROUTE 02
SHIRLEY MA 01464

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Use This Space to Write Your Comments

The Army wants your written comments on all of the options under consideration for dealing with the landfills at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. You can use the form below to send in written comments. If you have questions about how to comment, please call the Devens BRAC Environmental Coordinator, Jim Chambers, at 978/796-3835. Send this form, or any other written comments, postmarked no later than January 11, 1999 to:

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429
Fax 978/796-3133

We strongly feel that landfills at SAs 6, 12, 13 and AOCs 11, 40 and 41 should be transported and disposed of at an existing commercial landfill. Nobody can rely on long term monitoring as years go by. Hopefully the existing commercial landfill is a safe and secure place, away from rivers and water supplies

Comment Submitted by: Donald + Janet Fowke

Address: 335 Alger Rd., Harvard, Ma 01451

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

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Use This Space to Write Your Comments

The Army wants your written comments on all of the options under consideration for dealing with the landfills at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. You can use the form below to send in written comments. If you have questions about how to comment, please call the Devens BRAC Environmental Coordinator, Jim Chambers, at 978/796-3835. Send this form, or any other written comments, postmarked no later than January 11, 1999 to:

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429
Fax 978/796-3133

THANK YOU FOR LISTENING TO OUR COMMENTS AND CONCERNS AND YOUR WILLINGNESS TO CHANGE YOUR PLANS. I THINK YOU ARE GOING IN THE RIGHT DIRECTION

ANITA + PAUL BOISSEAU
3 FLETCHER STREET
AYER MA 01432

Comment Submitted by: _____

Address: _____

Use This Space to Write Your Comments

The Army wants your written comments on all of the options under consideration for dealing with the landfills at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. You can use the form below to send in written comments. If you have questions about how to comment, please call the Devens BRAC Environmental Coordinator, Jim Chambers, at 978/796-3835. Send this form, or any other written comments, postmarked no later than January 11, 1999 to:

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429
Fax 978/796-3133

Cost should not be the deciding factor in disposal of the land fills, I agree with Jim Kridler & Bill Burke, that we should go for the best value. Removal strategy from Devens

Comment Submitted by: Patricia A. Waesa

Address: 84 Groton School Rd
Ayer, Ma. 01432

Don Kochis
26 Park Lane
Harvard, MA 01451-1436

1/11/99

Mr. Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

RE: Proposed Plan for Landfill Cleanup at Fort Devens

Dear Mr. Chambers:

As a Formal Comment to the Proposed Army Cleanup of the seven landfills listed in the subject Plan, I pose the following questions:

1) Although page 13 of the plan indicates that "none of the landfills currently affect groundwater quality", is there any evidence that the landfills have affected groundwater quality in the past?

2) What is the criteria used for the determination that a particular site presents "acceptable human risks"? What is acceptable? At what point do the risks become unacceptable?

3) What specifically are the "contaminants" mentioned and several places in the Plan such as on page 3: "chorinated solvents and metals"?

4) Do any of the contaminants have a history of causing any specific diseases? If so, what specific diseases?

5) The plan makes reference to the Nashua River likely being "a significant contributor to floodplain sentiment contamination". What are the studies that serve as the basis for this statement or studies referenced that I may access?

Thank you.

Sincerely,

Don Kochis

Don Kochis

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Freedom's Way
Heritage Association

43 Buena Vista Street, Devens, Massachusetts, 01433
Tel: (508) 772-3654 FAX: (508) 772-3503

Jim Chambers
BRAC Environmental Coordinator
Devens Reserve Forces Training Area
AFZD-BEC, Box 1
Devens, MA 01433

Dear Mr. Chambers: January 8, 1999

Freedom's Way Heritage Association would like to take this opportunity to comment on the Proposed Remedial Alternative, Alternative 4c, presented in "The Proposed Plan for SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41", Superfund Program, November 1998.

As the Freedom's Way representative to regional discussions concerning the cleanup process since 1996, I can attest to the amount of work area organizations have put into their comments and concerns. The Association acknowledges the attempt made by the Army to consider the communities' concerns as requested during the hearings and response period for the July 1998 Preliminary Draft. To wit:

1. AOC 11 will be fully excavated and consolidated.

2. The elimination of the site adjacent to Shepley's landfill for the consolidated landfill site.

As the Army has offered options for debris disposal, Freedom's Way strongly urges the off-site debris disposal option for the following reasons:

A. Relocating the debris to a site on Devens presents the possibility of creating a new/future contaminated site and is no longer logical since another option is available.

B. An off-site location would be relocated to a properly licensed and managed facility, which offers more assured safeguards than a newly created site managed by a federal agency with limited presence, and a poor history in managing such sites.

C. The newly proposed site, is within the boundaries of the Town of Harvard, and could become a municipal liability affecting the reuse of the land.

D. As mentioned previously by all concerned parties, including Freedom's Way, the protection of the aquifer and its recharge area is of primary importance to the region. The water supply must not be put at risk. The Devens aquifer is a source of water for the Towns of Ayer, Shirley; for Devens itself; for MCI Shirley and is the only future water source for the Town of Harvard.

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E. The estimated cost comparisons of on-site disposal versus removal off-site are poorly explained, and even more to the point, do not appear to include estimates of the costs of monitoring and managing an on-site location for the thirty-year period. Once again, the obvious conclusion is that the cost difference between the two alternatives is not a significant issue.

F. Freedom's Way cannot endorse any alternative on-site location until cost comparisons are made available. Further information is needed before this organization can be assured that the proposed alternative offered by the Army is not a threat to the aquifer, human life, wildlife and other area resources.

Once again, we emphasize that the economic well-being of more than 25 towns is dependent upon successful redevelopment of Devens. We believe the requirements of the Base Realignment and Closure Act means the local redevelopment goals should be met. The Army's goals for the overall protection of human health and the environment is compatible with the region's goals -- the region will continue to participate in the cleanup process to insure all goals are met with mutual satisfaction.

Thank you for the opportunity to comment.

Sincerely yours,

Marge Darby

Marge Darby

cc: Hon. Edward M. Kennedy; Hon. John F. Kerry; Hon. Marty Meehan.

2/2

JUDD GREGG
NEW HAMPSHIRE

CHIEF DEPUTY WHIP

COMMITTEES:
BUDGET
APPROPRIATIONS
LABOR AND HUMAN RESOURCES

United States Senate

WASHINGTON, DC 20510-2904
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3 GLEN AVENUE
BERLIN, NH 03570
(603) 752-2604

99 PEASE BOULEVARD
PORTSMOUTH, NH 03801
(603) 431-2171

Reply to:
Concord Office

January 19, 1999

Jim Chambers
U.S. Department of The Army
Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Dear Mr. Chambers:

Enclosed is a copy of a letter from Dr. Philip O'Brien, the Director of the Waste Management Division for the NH Department of Environmental Services, regarding the proposed closure plans for the landfills at Fort Devens. Specifically, he is concerned with the impact to New Hampshire if the Army decides to transport solid waste from Ft. Devens to the state. As Dr. O'Brien points out, New Hampshire is a net importer of solid wastes with the bulk of this material coming from Massachusetts . New Hampshire may not have the capacity to properly handle an additional 267,000 cubic yards. He also cites statistics showing that disposing of the waste on site, as was done at Pease, is far more economically feasible.

Dr. O'Brien was closely involved with the closure of the landfills at the former Pease Air Force in New Hampshire. His expertise is unquestioned and I hope the Department of Army will seriously consider his comments on this matter. Thank you for your review of his letter and I look forward to your response.

Sincerely,

Judd Gregg
U. S. Senator

OPTIONAL FORM 99 (7-90)

FAX TRANSMITTAL # of pages ▶ 3

To Mark Stelmack	From Barbara
Dept./Agency	Phone # 978-796-3835
Fax #	Fax #

PAPER

1/3

RECEIVED JAN 22 1999

Jeffrey H. Harris, MD
PO Box 361
69 Whitney Road
Harvard MA 01461

Jan. 14,1999

Dear Mr. Chambers,

I write to support the removal of toxic Land Fills off Fort Devons and not consolidation into a new shielded Land Fill with protective liner. My review, I am sure the same as yours, shows a significant rate of failures. It seems unfair to burden the future with test wells and the possibility of future removal in 30 or 40 years. The record of leaking fuel tanks in this area alone serves as a warning to avoid risks. The cost of a future clean up exceeds any possible savings that might come from the on sight consolidation. Please, avoid the risk.

Sincerely,

Jeffrey H. Harris, MD
former member, Harvard Board Of Health

RECEIVED JAN 22 1999

State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES
6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095
(603) 271-2900 FAX (603) 271-2456

January 8, 1999

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Re: **Comments on Proposed Plan for SAs 6, 12 and 13, and AOCs 9, 11, 40, and 41, US Army, Reserve Forces Training Area, Devens, Massachusetts**

Dear Mr. Chambers:

I am writing with regard to the subject proposed plan and to thank you for the opportunity to do so. In the balance of this letter, I will provide information and commentary gained from New Hampshire's experience in closing the Pease Air Force Base located in the Towns of Newington, Greenland and the City of Portsmouth. Among other matters, we dealt with multiple landfill closures at Pease and did so without removal to an off-site location. The Army's Proposed Remedial Alternative at Devens includes relocating debris from SA 13 and AOCs 9, 11, and 40 to a new, on-site, lined landfill (estimated cost: $20.2 million) or to an existing, off-site commercial landfill (estimated cost: $34.8 million). Based on comparable experience at Pease, the cost of consolidating SA 13 and AOCs 9, 11, and 40 in an on-site landfill appears to be significantly lower than shipping the excavated solid waste to an off-site disposal facility.

At Pease in 1994-95, the Air Force excavated and consolidated four solid waste landfills into one on-site landfill. The landfill closure activities included: constructing a sedimentation basin to impound runoff and dewater liquids; installing a mobile groundwater treatment plant to treat contaminated water from the sedimentation basin prior to discharge to a POTW; placing 167,000 cubic yards of clean fill in order to sufficiently elevate the landfill mass above the groundwater table; excavating, transporting, placing and compacting approximately 405,000 cubic yards of solid waste; shipping hazardous waste off-site for treatment and/or disposal; capping the consolidated landfill mass with a 'RCRA C' composite cap; restoring the site and wetlands; and, installing additional monitoring wells. The total capital cost for the on-site consolidation of four landfills was estimated to be $19.9 million in the Pease Record of Decisions, the actual cost incurred by the Air Force totaled $15.6 million.

The unit cost per cubic yard of closing four landfills by consolidation at Pease was $38.50 per cubic yard. Applying the Pease unit cost to the total volume of debris to be relocated at the U.S. Army Reserve Forces Training Area (i.e., 267,000 c.y.), the total cost of on-site consolidation would be approximately $10.3 million. The average tipping fee at an existing commercial facility for the type of material found in SA 13 and AOCs 9, 11, and 40 is approximately $60 per ton. Conservatively assuming there is 1.5 cubic yards per ton of such material, the total tipping fee would be approximately $10.7 million (exclusive of excavation and

transportation costs). Thus, the tipping fees for disposal of the excavated waste alone could be roughly equal to the total cost of closing all four landfills by on-site consolidation.

Were the matter to rest here, as it may, the conclusion seems economically clear. That is, off-site disposal is not cost-effective. There is however a related issue. Specifically, taking aged, high volume wastes; transporting those wastes elsewhere; and, taking up diminishing (highly valuable), capacity at state-of-the-art landfills in Massachusetts or elsewhere, would seems to be poor environrnental management. New Hampshire is a net importer of solid waste and Massachusetts currently accounts for about 2/3 of the 1,400,000 total cubic yards imported in the last year of record, 1997. Thus, the impact of receiving an additional 267,000 cubic yards of Devens waste (were it all to come to New Hampshire) would: (1) increase the Massachusetts contribution to imports by 30%; (2) occur essentially instantaneously; and (3) seriously impact New Hampshire capacity.

From any reasonable perspective, the combination of the clearly unfavorable economics of off-site removal and the potential impact on a neighboring states landfill capacity strongly suggset that an on-site alternative should be favored. For additional information on the Pease experience please call Richard Pease at (603) 271-2908. For other inquiries please feel free to call me at (603) 271-2905.

Sincerely,

Philip J. O'Brien, Ph.D.
Director

cc: Dana Bisbee, Assistant Commissioner, NHDES
Richard Reed, Solid Waste Management Bureau
Richard Pease, P.E., Federal Sites Section, Superfund

United States Department of the Interior

FISH AND WILDLIFE SERVICE

New England Field Office
22 Bridge Street, Unit #1
Concord, New Hampshire 03301-4986

January 8, 1999

Mr. Dennis Gagne
U.S. Environmental Protection Agency
1 Congress Street
Suite 1100 HSS-CAN-7
Boston, Massachusetts 02114-2023

Mr. James Chambers
U.S. Army Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 10
Devens, Massachusetts 01432-4429

Dear Messrs. Gagne and Chambers:

Thank you for the opportunity to review the revised Proposed Plan for Study Areas 6, 12 and 13 and Areas of Contamination 9, 11, 40 and 41 at the former Fort Devens, Massachusetts. The following comments are provided in accordance with provisions of the Fish and Wildlife Coordination Act and our Interagency Agreement for technical assistance with EPA, Region 1.

The revised Proposed Plan includes a new (preferred) alternative in which AOC 11 (the Lovell Road Debris Disposal Area) is included in the group of landfills (SA 13 and AOCs 9 and 40) that would be excavated and then relocated to either an off-site facility or a new on-site landfill. The former Golf Course Driving Range has been identified as the primary location to be further evaluated for the consolidated on-site landfill. The Army is now proposing a preferred remedial action plan that would do the following:

1. Remove and relocate waste material from AOC 11 (the Lovell Road Debris Disposal Area located within wetlands bordering the Nashua River within the former Main Post area), AOC 9 (the North Post landfill located to the west of the Installation Waste Water Treatment Plant), AOC 40 (the Cold Spring Brook dump located adjacent to Patton Road within the former Main Post area), and SA 13 (the Lake George Street landfill located along the west side of Lake George Street, also within the former Main Post). Waste will be tested. Hazardous wastes, if encountered, would be disposed of at an off-site facility. Non-hazardous wastes would be relocated to either a new, consolidated landfill or transported to an off-site facility for disposal, depending on the results of further cost and environmental evaluations. Wetlands disturbed by the removal actions will be restored or replaced.

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2. Remove visible surface waste material at SA 12 (the Pistol Range dump site located adjacent to the Nashua River flood plain west of Dixie Road and Ranges B and P within the South Post area) and AOC 41 (a small debris dump located on the north shore of New Cranberry Pond near the Still River gate of the South Post). Known areas of surface soil contamination would be removed; hazardous waste, if encountered, would be disposed of at an off-site facility; and, long-term monitoring programs would be initiated by the Massachusetts Department of Environmental Protection at SA 12 and by the Army at AOC 41.

3. Provide no further action at SA 6 (a small dump located southwest of Shirley Road in the South Post area, and reported to have been used for the disposal of household wastes between 1850 and 1920).

As we have outlined in review of earlier drafts of the Proposed Plan, we believe AOC 11 presents a current and continuing risk to fish and wildlife resources due to chemical contamination at the site. Our review of the 1995 draft Remedial Investigation Report prepared by the Army for this site indicated AOC 11 had elevated levels of Total DDT in surface and subsurface soils as well as in the wetland sediments. The results of the Remedial Investigation also indicated that there were elevated concentrations of heavy metals, particularly lead and cadmium, within AOC 11. In addition, the dump is located within wetlands and the Nashua River flood plain. We have been concerned that the existing levels of contaminants at the site represented the potential for surface water or ground water flow, and flooding on the site itself, to contaminate other nearby wetlands and downstream areas of the Nashua River.

We believe inclusion of AOC 11 in the group of dumps that are to be removed, tested and safely disposed of significantly improves the long-term environmental protectiveness of the preferred remedial alternative. We commend the Army, EPA and the Massachusetts Department of Environmental Protection for proposing to take these actions.

We have continuing concern regarding the proposals for AOC 41 and SA 12 because of their location in ecologically-sensitive areas. The design, implementation and review of the long-term monitoring programs will be critical to additional, future evaluation of these sites.

We look forward to continuing to work with the Army, EPA and MADEP in executing these remedial actions, minimizing short-term impacts of the removal operations, restoring wildlife habitat at the sites, and in developing and implementing contaminant monitoring programs that will measure the effectiveness of the actions.

If there are any questions regarding these comments, please contact Mr. Tim Prior at (978) 443-5172.

Sincerely yours,

Michael J. Bartlett
Supervisor
New England Field Offices

cc: J. Chambers, US Army
P. Tyler, EPA
C. Rosiu, EPA
K. Finkelstein, NOAA
S. Simon, ATSDR
K. Carr, FWS/NEFO
B. Oliveira, FWS/Great Meadows NWR
R. Scheirer, FWS/NEFO
W. Zinni, FWS/RO Realty
H. Roddis, MA Audubon Society
Reading File

ES: TPrior:1/8/99:978-443-5172

State of New Hampshire
DEPARTMENT OF ENVIRONMENTAL SERVICES
6 Hazen Drive, P.O. Box 95, Concord, NH 03302-0095
(603) 271-2900 FAX (603) 271-2456

January 8, 1999

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Re: **Comments on Proposed Plan for SAs 6, 12 and 13, and AOCs 9, 11, 40, and 41, US Army, Reserve Forces Training Area, Devens, Massachusetts**

Dear Mr. Chambers:

I am writing with regard to the subject proposed plan and to thank you for the opportunity to do so. In the balance of this letter, I will provide information and commentary gained from New Hampshire's experience in closing the Pease Air Force Base located in the Towns of Newington, Greenland and the City of Portsmouth. Among other matters, we dealt with multiple landfill closures at Pease and did so without removal to an off-site location. The Army's Proposed Remedial Alternative at Devens includes relocating debris from SA 13 and AOCs 9, 11, and 40 to a new, on-site, lined landfill (estimated cost: $20.2 million) or to an existing, off-site commercial landfill (estimated cost: $34.8 million). Based on comparable experience at Pease, the cost of consolidating SA 13 and AOCs 9, 11, and 40 in an on-site landfill appears to be significantly lower than shipping the excavated solid waste to an off-site disposal facility.

At Pease in 1994-95, the Air Force excavated and consolidated four solid waste landfills into one on-site landfill. The landfill closure activities included: constructing a sedimentation basin to impound runoff and dewater liquids; installing a mobile groundwater treatment plant to treat contaminated water from the sedimentation basin prior to discharge to a POTW; placing 167,000 cubic yards of clean fill in order to sufficiently elevate the landfill mass above the groundwater table; excavating, transporting, placing and compacting approximately 405,000 cubic yards of solid waste; shipping hazardous waste off-site for treatment and/or disposal; capping the consolidated landfill mass with a 'RCRA C' composite cap; restoring the site and wetlands; and, installing additional monitoring wells. The total capital cost for the on-site consolidation of four landfills was estimated to be $19.9 million in the Pease Record of Decisions, the actual cost incurred by the Air Force totaled $15.6 million.

The unit cost per cubic yard of closing four landfills by consolidation at Pease was $38.50 per cubic yard. Applying the Pease unit cost to the total volume of debris to be relocated at the U.S. Army Reserve Forces Training Area (i.e., 267,000 c.y.), the total cost of on-site consolidation would be approximately $10.3 million. The average tipping fee at an existing commercial facility for the type of material found in SA 13 and AOCs 9, 11, and 40 is approximately $60 per ton. Conservatively assuming there is 1.5 cubic yards per ton of such material, the total tipping fee would be approximately $10.7 million (exclusive of excavation and

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transportation costs). Thus, the tipping fees for disposal of the excavated waste alone, could be roughly equal to the total cost of closing all four landfills by on-site consolidation.

Were the matter to rest here, as it may, the conclusion seems economically clear. That is, off-site disposal is not cost-effective. There is however a related issue. Specifically, taking aged, high volume wastes; transporting those wastes elsewhere; and, taking up diminishing (highly valuable) capacity at state-of-the-art landfills in Massachusetts or elsewhere, would seems to be poor environmental management. New Hampshire is a net importer of solid waste and Massachusetts currently accounts for about 2/3 of the 1,400,000 total cubic yards imported in the last year of record, 1997. Thus, the impact of receiving an additional 267,000 cubic yards of Devens waste (were it all to come to New Hampshire) would: (1) increase the Massachusetts contribution to imports by 30%; (2) occur essentially instantaneously; and (3) seriously impact New Hampshire capacity.

From any reasonable perspective, the combination of the clearly unfavorable economics of off-site removal and the potential impact on a neighboring states landfill capacity strongly suggest that an on-site alternative should be favored. For additional information on the Pease experience please call Richard Pease at (603) 271-2908. For other inquiries please feel free to call me at (603) 271-2905

Sincerely,

Philip J. O'Brien, Ph.D.
Director

cc: Dana Bisbee, Assistant Commissioner, NHDES
Richard Reed, Solid Waste Management Bureau
Richard Pease, P.E., Federal Sites Section, Superfund

OFFICES OF THE
BOARD OF SELECTMEN
TOWN ADMINISTRATOR

13 AYER ROAD • HARVARD, MASSACHUSETTS 01451 • (978) 456-4100
FAX (978) 456-4107

January 8, 1999

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Dear Mr. Chambers,

The Harvard Board of Selectmen would like to take this opportunity to comment on the Proposed Remedial Alternative, Alternative 4c, presented in "Proposed Plan for SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41" dated November 1998 (November Plan).

1. The Board is pleased that AOC 11 will be fully excavated and consolidated to another site, as requested at hearings on the July 1998 Preliminary Draft Proposed Plan (July Plan)

2. The Board concurs with the Army's decision not to use the proposed site adjacent to Shepley's Landfill as the consolidated landfill site, as proposed in the July Plan.

Both of the above changes indicated the Army's willingness to listen to and act upon the concerns of the communities.

3. The Board strongly endorses the off-site disposal option, for the following reasons:

a. Debris would be relocated to a properly licensed and managed facility, as opposed to creating a new site in a relatively undisturbed (and presumably uncontaminated) area on Devens.
b. Long term management of the site would be by a licensed contractor rather than a federal agency having limited presence on the site.
c. While the Devens consolidated landfill would remain the Army's responsibility, the proposed site is within Harvard's boundaries and, therefore, could eventually become a municipal liability.
d. The exact location of the aquifer and recharge areas may not be fully understood and, therefore, the town's future public water supply may be at risk. Removal to a licensed site will provide the greatest protection to our water supply. *Protection of the aquifer is of primary importance not only to the town of Harvard, but also to the entire region.*

4. It is our understanding that the only site on the Main and North Posts that met all the criteria for siting a new consolidated landfill is the driving range of the former golf course on Patton Road. Endorsement of Alternative 4c by this Board should not be construed to be endorsement of that site. The Board prefers to withhold comment on the site pending further information on the Army's basis for determining the cost of on-site vs. off-site disposal. In addition, we would like to go on record with the following concerns and questions on the selection of this particular site:

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a. Given the Army's record with Shepley's Landfill, what assurances can be given that a consolidated landfill on this site will not be problematic?
b. Given that Harvard's only potential public water supply is the Devens aquifer, will the siting of the landfill at the former driving range compromise the town's ability to locate a new well in this area?
c. As noted in 3d above, was any additional delineation or testing of the aquifer's boundary and recharge areas done prior to selecting this particular site? From the gross mapping prepared for the Reuse Plan, the aquifer boundary appears quite close to the former driving range.

5. We question the basis for the estimated costs of on-site disposal ($20.2 million) and removal ($34.8 million) given under Alternative 4c. We would appreciate further explanation and documentation of these estimates before a decision is made by the Army on on-site vs. off-site disposal.

6. The November Plan lists 4 factors in the Army's decision on-site or off-site disposal: overall protection of human health and the environment; cost; ability to satisfy health and safety concerns identified by area residents and public officials; and contractor's past performance. The Board would appreciate participating in the review and evaluation of the design criteria for and the responses to the Requests for Proposals for both the on and off-site alternatives to assure community input in the satisfaction of these 4 criteria.

Thank you for this opportunity to comment.

Sincerely,

Lucy B. Wallace
Selectwoman

THE JOINT BOARDS OF SELECTMEN

Town of Ayer
1Main Street
Ayer, MA 01432
(978) 772-8220

Town of Harvard
13 Ayer Road
Harvard, MA 01451
(978) 456-4100

Town of Lancaster
695 Main Street
Lancaster, MA 01523
(978) 365-3326

Town of Shirley
Lancaster Road
Shirley, MA 01464
(978) 425-2600

December 9, 1998

Mr. James Chambers
U.S. Army, RFTA,
BRAC Environmental Office
30 Quebec Street,
Box 100
Devens, Massachusetts 01432-4429

Re: Devens Landfill Remediation Project

Dear Mr. Chambers:

We would like to take this opportunity to sincerely commend you for all of the effort you have exerted in the pursuit of an off-site alternative for the landfill remediation issue at Devens. It is very important for us to see the public input having a real role in the process. Your efforts are greatly appreciated.

The Joint Boards of Selectmen would like to re-iteate our position, a position that is shared by Mass Development, that the preferred and best option for landfill remediation at Devens is to have all of the material excavated and hauled via rail to an approved offsite location. We believe that this method of remediation, which will encourage recycling as a component, will not only prove to be cost effective but also most protective of human health and our enviromnent. Equally as important, and unlike any proposed onsite consolidation plans, the offsite option has received full public support.

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We appreciate your time and consideration in this matter, and we sincerely hope to receive your support of our position because it is cost effective, it has public support and most importantly it is most protective of human health and our environment.

If you have any questions about our position we are available to speak with you or members of your staff at your convenience.

Sincerely,

Pauline J. Hamel, Chairman
Town of Ayer Selectmen

Sarah Hamill, Chairman
Town of Harvard Selectmen

Kyle J. Keady, Chairman
Town of Shirley Selectmen

Nathaniel T. Dexter, Chairman
Town of Lancaster Selectmen

75 Westcott Road
Harvard, MA 01451

January 11, 1998

Mr. Jim Chambers
BRAC Environmental Coordinator
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Dear Jim,

We attended the December meeting at which alternative solutions for the disposal of toxic wastes at Devens were discussed. After considering the options, we would like to state our preference for off-the-Fort disposal.

Creation of a large, new landfill on a hitherto uncontaminated site seems undesirable when other landfills are available and the overall objective is to clean up the Fort, render it fit for human use, and protect the aquifer.

Although we have been assured that “hazardous” waste will be taken off the Fort, we are aware, as you too must be, that it is impossible to identify “all” the hazardous chemicals and other substances in the Devens waste. To represent most of the “non-hazardous” waste as simply construction debris begs the question of what these materials may be contaminated with, e.g., asbestos, radioactive materials, unidentified chemicals. Perhaps it should be noted that even many so-called non-hazardous pollutants including common household chemicals can adversely affect groundwater quality. The superior solution to the waste-disposal problem in view of a proximal aquifer is to remove all the designated wastes from Devens and deposit them in an extant landfill elsewhere.

If a large on-the-Fort landfill is developed, the aquifer will ultimately be in jeopardy, regardless of the assurances so far given.

1. Even the best landfill liners leak. They can be degraded and caused to crack by substances which are not normally considered hazardous wastes. Ethyl alcohol (i.e. booze) is one of numerous substances, including vinegar, shoe polish and other common household agents which can cause cracks in plastic liners. If the Devens landfill were to leak, groundwater could be in jeopardy.

2. Leachate collection systems get clogged, leak and fail.

3. Even landfill covers have problems which can result in leakage into the surrounding area.

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4. To protect the aquifer, you plan to install a number of test wells. Yet, if fractured bedrock exists under the landfill, it will be difficult to determine where the polluted spill-over has gone. The use of groundwater monitoring wells is unreliable since to be effective they must be placed very close together (much closer, for example than at Shepley's Hill.) While the general hydrogeology of the Fort has been described, a detailed hydrogeological description of the proposed landfill area has yet to be done and will only be done as part of the final design for the proposed landfill. It seems to us that a thorough characterization of the area proposed for the landfill should have preceded selection of that area for a landfill. (Moreover, a throrough characterization of several potential areas should have been done before a final site for the proposed landfill was chosen.)

Since the EPA is on record as acknowledging that landfills leak, liability for such catastrophes becomes very important. It appears that the owners of the landfill (e.g., the Army in the case of a Devens consolidated landfill), are required to provide assured funding for post-closure care for only 30 years. In year 31 and thereafter, who is financially responsible when the landfill fails? What is the jurisdiction responsible for developing and permitting the landfill. Will it be the Army (i.e., the Federal Government). or we, the locals, the citizens of MA? Where is it written that the U.S. Army agrees to liabilily for landfill failure and associated problems after year 30 and in perpetuity?

Another issue which the Army, -if it is the jurisdiction which will bear infinite responsibility for the on-site landfill- will need to address is control of gases, which can become a problem if the landfill cover deteriorates. The Army should be obligated in writing to include state of the art gas-monitoring and management systems for the lifetime of the landfill.

The Army should be obligated to provide,- in perpetuity,- for a worst-case landfill failure, including the need to excavate and transport all the waste. Even though the proposed landfill is reportedly not on a primary aquifer, groundwater_ inter-relationships need to be clearly spelled out and worst case scenarios explained to the public.

The buffer zone now proposed is inadequate. The proposed landfill should be located at least a mile from the nearest residence but is only about half a mile from the nearest school. The proposed landfill is a potential source of dust particles which can cause respiratory illness and other health problems.

Since history has shown that the Army and other federal agencies cannot be counted on to protect the interests of local citizens, there should be Army funding to enable a private consulting firm, selected by the local jurisdictions (Harvard, Ayer, etc.), to conduct independent monitoring of the landfill, also forever.

In the long run, it may be cost-effective to remove the Devens wastes to an existing landfill elsewhere once the true costs of the landfill including monitoring, remediation, liability claims and litigation during the lifetime of the landfill are factored into the equation. It will also save people unnecessary (health) problems and anguish. Since the area of the proposed landfill will revert to the Town of Harvard in 30 - 40 years, it is very important that the Army include representatives from our Town in its cost-benefit deliberations; otherwise this project can hardly be considered as one truly involving public disclosure and involvement. We do not want a repeat of Otis here.

We believe that it is unwise public policy to burden future generations with potential health and pollution problems resulting from a Devens landfill located near the aquifer and with the cost of again remediating a superfund site but this time after the consolidated landfill fails. Off-site disposal would obviate this risk.

We appreciate the opportunity to comment on the Devens landfill proposal and look forward to your substantive response to our concerns.

Yours.

Ruth Miller

(Mrs.) Ruth Miller

Morton G. Miller M.D.

Morton G. Miller, M.D.

Massachusetts Audubon Society
208 South Great Road
Lincoln, Massachusetts 01773
(781) 259-9500

January 11, 1999

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Re: **Proposed Plan for SAs 6, 12, and 13 and AOCs 9, 11, 40 and 41**

Dear Mr. Chambers

On behalf of the Massachusetts Audubon Society I submit the following comments on the proposed plan for remediation of the above-referenced seven landfills located at Devens.

The Massachusetts Audubon Society supports the proposed plan. The Army deserves recognition for working cooperatively and productively with the BRAC cleanup team, the Devens Commerce Center, and the host communities to address the concerns raised during the comment period on the previously proposed plan, and to develop a revised proposal which adequately protects human health and the environment. The current Proposed Plan differs significantly from the previous proposal in several important respects. In particular, Massachusetts Audubon is pleased that the Army has identified a new location for consolidation of the debris materials if on-site disposal is chosen as the final preferred action, and that it has agreed to excavate AOC 11.

The new on-site consolidation location is not located over the regional aquifer, consistent with the communities' vigorously stated concerns for protection of this vital natural resource. The proposed plan also calls for a dual approach to the issuance of a contract for the landfill cleanup work, with off-site disposal being considered in parallel with the new on-site consolidation site. This addresses the communities' request that the Army pursue an off-site disposal option if such an option is feasible and can be formulated to provide the equivalent level of environmental protection. The qualifications of the selected contractor and the environmental protection status of an off-site alternative must be carefully evaluated, to ensure that if off-site disposal is pursued it will not merely transfer pollution concerns from one locality to another.

The decision to excavate AOC 11 responds to comments submitted by Massachusetts Audubon and many other groups and individuals urging the Army to remove this debris from its current location on the banks of the Nashua River. This removal action will not only serve to protect the river from

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contaminants that may be present in the debris, but also addresses issues related to the dumping of this material in wetlands and floodplain areas adjacent to the river at a time (1975-80) when both Massachusetts and federal laws (Massachusetts Wetlands Protection Act, federal Clean Water Act) prohibited disposal of materials in such areas without permits. The excavation of debris from AOC 11 and several of the other dump sites will facilitate the restoration of floodplain and wetland areas, contributing to larger regional goals for reversing historic losses of these important resources in the Nashua River basin. While these sites represent only a tiny fraction of the total amount of wetland and floodplain fill that exists in the Nashua River watershed, it is nevertheless important that such actions be taken wherever feasible. Historic filling took place in many locations over a long period of time, and restoration must be approached in a similar way, at a host of sites whenever opportunities such as this cleanup action provide the means to accomplish restoration. Simply removing the debris and restoring the ground elevation to the natural level recreates flood storage. It also can be expected that wetland vegetation will naturally revegetate historically filled wetland sites, since the underlying wetland soils remain in place and the natural hydrology typically will be restored simply through restoration of the natural surface elevation contours.

One outstanding concern with the proposed approach is the status of SA 12 and AOC 41. The proposal calls for surface removal only at these two sites, combined with long-term monitoring. These two sites are both small, representing a small amount of the total amount of debris in the seven landfills. Both sites are located in sensitive areas, near water bodies. Given these facts, the Army should reconsider the option of full removal of these materials. It may be more cost-effective, as well as more environmentally protective, to remove these two small sites rather than to leave them in place and commit to a long term monitoring program. In any event, excavation will be necessary if contaminated materials are found at the sites during the proposed surface removal operation. Therefore, the Army should include contingencies for full excavation of these sites in the request for contractor bids.

In conclusion, the Massachusetts Audubon Society applauds the Army's cooperative efforts in working will all of the involved parties and stakeholders to develop a solution which is both feasible and protective of the natural environment which supports both Devens and surrounding host communities.

Thank you for the opportunity to comment.

Sincerely,

E. Heidi Roddis
Environmental Policy Specialist

cc: Jim Byrne, U.S. Environmental Protection Agency
John Regan, MA Department of Environmental Protection
Bill Burke, Devens Commerce Center
Nashua River Watershed Association
PACE

Citizens to Protect Residential Harvard

P.0. Box 424
Harvard, Massachusetts 01451

January 9, 1999

Jim Chambers
BRAC Environmental Coordinator
Devens Reserve Forces Training Area
AFZD-BEC, Box 1
Devens, MA 01433

Dear Mr. Chambers,

Citizens to Protect Residential Harvard is pleased to comment on the Proposed Remedial Alternative 4c, presented in "the Proposed Plan for SAs 6, 12, and 13; and AOCs 9, 11, 40 and 41," Superfund Program, November 1998.

Citizens to Protect Residential Harvard (CPRH) was founded in 1989 to protect Harvard residents from the negative impact of unreasonable development in surrounding towns. Although the majority of Devens is within the geographical limits of Harvard, it is not within our governmental structure.

CPRH is aware of the effort over the past few years to work with the communities to allow their concerns to be addressed. Our present concern is that when the towns regain their Devens properties in thirty years, the towns should not face environmental problems created by Army cost-cutting of Super Fund cleanup.

We believe that choices on all environmental issues should be made using the "highest and best" land usage as the standard. Moving contaminated materials to a consolidated landfill on Devens, even with removal of some recycled materials, and using present landfill best practice, is merely transferring the potential risk to another site on Devens.

This opinion is based on the information that landfill plastic liners have a short life, during which time leachates can work into ground water through cracks and holes. Permanent ground water quality is our goal for this region as we are totally dependent upon groundwater for our residential usage.

Nashua River Watershed Association has been a leader is improving that river's point source pollution. This has taken twenty five years. We feel to carry on this standard for water quality, every single effort must be made to protect their progress. The booklet (enclosed) declaring that Grove Pond and Plow Shop Pond are destroyed for fishing and swimming should be sufficient warning, that many nearby places are already destroyed.

The public has grown cautious through evidence of carelessness and coverups such as revealed in "A Civil Action." Everyone bears the responsibilitye for treating water with the value it deserves.

1/2

RECEIVED JAN 12 1999

A fear is that once a 12-acre landfill has been created, it could be considered a potential for further landfill additions. No community is proud of its landfill. Only archeologists get excited to find an untouched dump.

Further, if Harvard chooses to put wells in that area of Devens, the landfill may seriously hamper that future development.

For these reasons, CPRH cannot wholeheartedly choose the option to create a landfill and strongly supports the complete removal to another licensed landfill site off Devens.

Yours truly,

Kenneth B. Miller

Kenneth Miller, M.D.
President

Use This Space to Write Your Comments

The Army wants your written comments on all of the options under consideration for dealing with the landfills at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. You can use the form below to send in written comments. If you have questions about how to comment, please call the Devens BRAC Environmental Coordinator, Jim Chambers, at 978/796-3835. Send this form, or any other written comments, postmarked no later than January 22, 1998 to:

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429
Fax 978/796-3133

- I had to write this lying in bed so a bit messy -

19 Dec 97

Jim:

- First of all, Great, handout. Well written easy to follow. Super Chart!

- I concur with your recomendation, Ha with these comments:
  - I had concerns with AOC 11 + 41 but after reading the Risk analysis, felt OK with AOC 11.

  - On AOC 41, I would excavate and relocate the new site at Shelpay's Hill.
    Reasons: Military + Household wastes from the "50" included oils, batteries, Transformers, and pesticides.
    This is a relatively small area near (less than 100 feet) to Nashua Canberry Pond.

Thank you for the process and doing a great job!

Duncan H Chapman III

Comment Submitted by: Duncan Chapman

Address: 131 Littleton Road
Harvard, MA, 01451
H 978-456-3082
W 978 916-3219

W9704009T

Arthur A. Joseph, PT
P.O. Box 1052
S. Lancaster, MA 01561
January 14,1998

Jim Chambers
U.S. Army, Reserve Forces
Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Dear Mr. Chambers,

Were there any test performed to test the quality of water to the depth of the hard rock base in the area called Fort Devens and beyond?

It is known that only the top level of ground water is the water level. Below this level the soil is waterlogged. Were test done by an independent laboratory of the waterlogged area and to what depth?

The water table is close to the surface in some areas and hundreds of feet beneath the soil in other areas. What can you tell us about the lower depths of the ground and waterlogged areas in and within several miles of the area called Fort Devens?

Both ground and surface water move downslope and eventually empty into steadily flowing streams, which in turn drain into larger bodies of water.

My concern is that test were not performed to sufficient depths, nor were there any test performed to insure that contaminates didn't seep out of the area called Fort Devens and into the surrounding towns and beyond!

If contaminates seeped out of the base area, which is highly likely, what is to be done about it?

How do you clean-up waterlogged soil?

I shall await an answer to my questions after you have consulted with the environmental experts.

Sincerely,

Arthur A. Joseph, PT

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DEC 29

December 22, 1997

Mr. Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Dear Mr. Chambers:

As recent residents and homeowners in Ayer, we are very disappointed to learn that the proposed siting for the relocation of the Army landfill sites has been designated to be next to Shepley's Hill Landfill in Ayer.

We do not believe Shepley's Hill Landfill meets the 9 criteria which were set in place by the EPA for the selection:

Criteria #1: Overall protection of human health and the environment: There are residential neighborhoods within ½ mile or less of the proposed site.

Criteria #3: Long-term effectiveness and permanence: Contamination of the water supply over time is a risk at the Shepley's Hill location. The Plow Shop Pond is adjacent to the proposed landfill site.

Criteria #9: Community acceptance: A major portion of the resident population of Ayer do not want this relocation to take place.

We moved to Ayer after the base closure with the hope that the Town of Ayer had entered a new phase and would be improving with every new decision made regarding its growth, environmental impacts, open space issues, etc. The Army's presence during the Ft. Devens years is certainly evident with the number of rooming houses and multiple dwellings prominent in the center of town.

Considerations of this kind must be made in the best interest of the Town of Ayer. Ayer has a long way to go to improve its reputation to be able to attract newcomers so it can flourish, and we have to start now. The relocation of the Army's landfill sites to Ayer will certainly be a step backward. Ayer has already contributed to the Army and now it's time for the Army to thank us, not throw their garbage in our yard. This town is only 9.57 square miles; it can't afford to be a dumping ground. Decisions like this will diminish the sense of pride that is so essential in our community.

We believe that the alternative proposal to excavate the waste for off-site disposal should be re-visited; cost should not be the determining factor when protection of human health and environment is at risk. We are opposed to the Shepley's Hill relocation site, but if it **has** to be the site for the Army's landfill, the Army needs to contribute something in return, like funding for overall improvements to the Town.

Bill and Lori Haugh

Comment Submitted by: Bill and Lori Haugh

Address: 28 High Street
Ayer, MA 01432

Use This Space to Write Your Comments

The Army wants your written comments on all of the options under consideration for dealing with the landfills at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. You can use the form below to send in written comments. If you have questions about how to comment, please call the Devens BRAC Environmental Coordinator, Jim Chambers, at 978/796-3835. Send this form, or any other written comments, postmarked no later than January 22, 1998 to:

Jan 22, 1998

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429
Fax 978/796-3133

I am very concerned about the consideration of a large landfill to be placed near Grace Pond in Ayer (not sure which of the above numbers it is) — I understand that it is less than a half mile from a residential area, and that it is also near Ayer water wells — Surely, in all the available Devens land there are places more distant from habitations and water supplies.

I appreciate your asking for citizen input. I am the Episcopal Priest at Trinity Chapel — an Episcopal Church in Shirley with members in Ayer —

Comment Submitted by: The Rev. Nancy H. Shepherd

Address: Trinity Chapel
141 Centre Rd.

Use This Space to Write Your Comments

The Army wants your written comments on all of the options under consideration for dealing with the landfills at SA's 6, 12, and 13, and AOCs 9, 11, 40, and 41. You can use the forms below to send in written comments. If you have questions about how to comment, please call the Devens BRAC Environmental Coordinator, Jim Chambers, at 978/796-3835. Send this form, or any other written comments, postmarked no later than January 22, 1988 to:

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Deven, MA 01432-4429
Fax 978/796-3133

(1) How can you guarantee that no waste will EVER show into the nearby Grove Pond wells

We have enough headaches with Shepley landfill - now the GOV'T wants to add more!

Please find another location

thank you

(2) You say that Fed. Gov will remediate the problem if one later exists - what happens if the wells are contaminated - will you fund new well construction?

If so - why not just do that in the first place

Comment Submitted by: JANET PROVIDAKES

Address: 1 BRILAINA CT
AYER, MA
01432

W9712009P

Use This Space to Write Your Comments

The Army wants your written comments on all of the options under consideration for dealing with the landfills at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. You can use the form below to send in written comments. If you have questions about how to comment, please call the Devens BRAC Environmental Coordinator, Jim Chambers, at 978/796-3835. Send this form, or any other written comments, postmarked no later than January 22, 1988 to:

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429
Fax 978/796-3133

Because SA12 and AOC41 are potential sources of ecological risks, the alternative chosen needs to include enough debris excavation and testing to insure all significant sources of ~~[illegible]~~ contaminants are removed.
Suggestions that contaminants at SA12 come from the river need to be better supported by additional information +/or debris removal.

Comment Submitted by: Robert Lidstone

Address: 311 Neck Rd.
Lancaster MA 01523

W9712009P

Use This Space to Write Your Comments

The Army wants your written comments on all of the options under consideration for dealing with the landfills at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. You can use the form below to send in written comments. If you have questions about how to comment, please call the Devens BRAC Environmental Coordinator, Jim Chambers, at 978/796-3835. Send this form, or any other written comments, postmarked no later than January 22, 1988 to:

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429
Fax 978/796-3133

1/8/98

My comments regard AOC 11. My understanding is that the debris was put there in clear violation of federal and state law and that the area originally contained wetlands beneficial to the welfare of the river and people and wildlife dependent on it. As part of any plan to excavate this area, I think the Army should restore the wetlands to a condition approximating what was there before the fill was introduced. I think the Army in making its decisions should consider the positive benefit these restored wetlands would have. All things considered, I think the Army should excavate the area during a low water period and restore the area to the way it was before the fill was introduced. Regarding all the landfills, I think the Army should consider composting or recycling the material where possible. Also, regarding the "proposed plan" document, references to relevant background materials would have been helpful. Finally, I appreciate you coming to Shirley to discuss the plan with town boards. The meeting was very helpful.

Comment Submitted by: Bob Burkhardt
Address: 12 Harvard Rd #10
Shirley, MA 01464

Use This Space to Write Your Comments

The Army wants your written comments on all of the options under consideration for dealing with the landfills at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. You can use the form below to send in written comments. If you have questions about how to comment, please call the Devens BRAC Environmental Coordinator, Jim Chambers, at 978/796-3835. Send this form, or any other written comments, postmarked no later than January 22, 1988 to:

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429
Fax 978/796-3133

1.) how Accurate Are the test Procedures (is test Excavations, Ground water samples & soil samples) in a wholistic View?
B.) who Did the testing (unBiased 3rd Party?)
2.) What is Being Done about the Firing Ranges lead Contamination?
3.) when Area 12 is Being Excavated what is Going to Be done to keep the Nashua River from being Contaminated?
4.) what is the life Expectancy of the GEOMembrane?
B.) how is the GEOMembrane Adhered to one another (sheets) And what is the life expectancy of the Adhesion product.
5.) Does the 500 Ft Boundary of land fill sites take into account the Presence of Bodies of water?
6.) what is being Done to let the GEOMembrane "Breath" out Decomposition Gasses?

Comment Submitted by: John Lind
Address: 95 Pleasant St.
Ayer, Ma.
01432 - 1112
(978) 772-2074 For questions or comments.

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JAN 21 1998

Use This Space to Write Your Comments

The Army wants your written comments on all of the options under consideration for dealing with the landfills at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. You can use the form below to send in written comments. If you have questions about how to comment, please call the Devens BRAC Environmental Coordinator, Jim Chambers, at 978/796-3835. Send this form, or any other written comments, postmarked no later than January 22, 1998 to:

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429
Fax 978/796-3133

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JAN 22 1998

We disagree with the current plan to move debris to the Shepley's Hill location with the following comments:

1. Although the superfund guidelines require solid waste to be stored onsite, this location is as **close to the town line of Ayer**, and it's wells, as you could possibly get.
2. Even though your experts think that the water flow is away from the wells, there is no guarantee that this would remain true after a 100-year flood or other disaster.
3. Why not locate it in the **center** of Devens like in the golf course? I think that we would all agree that protecting Ayer's water supply is more important than maintaining a recreation area. There would be easy access to route 2 for the trucks and equipment.
4. We hear that it can not be located in the area south of route 2 because it would impact the Army's training plans. The construction would only be in their way for 18 months. After that, if it is as safe as you say, then it would be just another hill.
5. **Why is Ayer's water safety and quality of life less importance than the Army's training plans or a golf course**?

Comment Submitted by: Paul + Anita Boisseau

Address: 3 Fletcher ST
Ayer MA 01432

JAN - 5 1998

DEVENS SHEPLEY HILLS LANDFILL

Why is the DEP allowing the Devens Enterprise Zone to consider adding another in-the-ground dump site on property located near a large water source (Grove Pond) when for several years it's been strongly encouraging towns to recycle and send the remainder of trash to 'trash to energy plants in order to protect Masss. water resources - a good idea. Why not re-cycle what you can from the seven dumps and send the rest off to the trash-to-energy plants?

Have you heard of the Love Canal toxic waste cleanup? What about the Times Beach toxic waste cleanup? This past week I came across an article in a science publication about the current buyout of 358 homes, that's 358 families, by the federal environmental agency, the EPA, because it is so badly contaminated by the toxic waste of the surrounding industries.. It is known as the Escambria Superfund Site which is located in Pensacola, Fla., and to quote the article it "possesses unhealthy concentrations of toxic compounds, including dioxin. Escambria is a poor and predominantly black neighborhood that has been subjected to a disproportionate share of industrial activity and pollution. Industrial activity gradually surrounded this neighborhood, causing a dramatic devaluation of residential property and marring the community's attractiveness. Once the homes and apartments are bulldozed and cleared out the area will be designated for industrial use only, limiting the governments cleanup responsibilities - and costs" That's quite a windfall for the surrounding industries. They're sure to be falling over one another to buy up the contaminated properties at bargain basement prices. Meanwhile the 358 families that lived there had to disrupt their lives and most likely contend with fatal inllnesses due to the contamination.

My point in bringing these developments to your attention is: Just as we, the Ayer residents, are concerned about placing another landfill close to Grove Pond a/w/a Ayer homes, I'm sure the residents of these 3 above mentioned communities asked their elected representatives to put the health and safety of the voting, taxpaying residents above big money. The EPA, above all agencies, should have known those industries would have toxic fallout and prevented them from settling near residential neighborhoods rather than now have to uproot 358 families causing much hardship. But they didn't! We have to make our politicians and government officials responsible for their decisions. Their names should be tied and publicized to every anti-citizen development that is forced on the resident taxpayers of every town in this commonwealth and country. **My fear is:** that once the dump is created then it will continue to be utilized by Devens industries. Also the site is located near Devens r.r. tracks. It would be very convenient, in the future, to import trash once a trash to energy plant was built. After all there would already be two large trash sites there - why not utilize it as a trash-to-energy site? I'm sure the EPA would agree with that!!

The government, both civic and military, have lied to the public over and over again about keeping an eye on feared industries, promising to prevent pollution only to have the taxpayers be the big losers in the end. Actually it isn't our government that's lied to us but **our representatives to the government** who've been deceitful. They should heed Abraham Lincoln's words spoken at his Gettysburg Address ....." and that government of the people, by the people, **for the people**, shall not perish from the earth"

WE CAN'T AFFORD TO HAVE A DUMP PLACED IN THE GROVE POND AREA! **HAUL IT OUT!**

NOTES: Science News, Dec. 6, 1997, Vol. 152, No. 23, pg. 366
Visit Science News Online. http://www.sciencenews.org

- Comment Submitted by, Louise Rogers
4 Pierce Ave.
Ayer, Ma. 01432

DEC 19

PEOPLE OF AYER CONCERNED ABOUT THE ENVIRONMENT
35 Highland Avenue
Ayer, MA 01432
Voice/FAX: (978) 772-9749

Mr. James Bryne
US EPA, Region 1
JFK Federal Building HBT
Boston, MA 02203

December 17, 1997

Dear Mr. Byrne:

On behalf of People of Ayer Concerned About the Environment (PACE), I respectfully request an extension of the comment period for the U.S. Army's Proposed Plan for SAs 6, 12, and 13 and AOCs 9, 11, 40, and 41. Additional time is needed to review documents and offer informational seminars to local residents.

The Comment Period for this project directly overlaps with the comment period for another important environmental issue related to the development of Devens: that of the Bioconversion (sludge processing) plant siting. Hearing dates have tentatively been set for exactly the same day for each project! Additionally, the holidays fall in the middle of the comment period for both projects, at the time of year when most area residents are overextended with holiday related activities.

Therefore, we request an additional thirty days in order to reach out and educate local citizens so that they can respond in an appropriate manner. I would like to request a closing date of February 22, 1998 for the Public Comment Period. Your immediate attention to this issue will be greatly appreciated.

Thank you for your continued support.

Sincerely,

Laurie S. Nehring

Laurie S. Nehring,
President of PACE

cc: Senator Robert A. Durand
Congressman Martin T. Meehan
Representative Robert Hargraves
Representative Geoffrey D. Hall
Representative Patricia Walrath
Ms. Lynne Welsh, DEP
Mr. James Chambers, BRAC Environmental Coordinator

THE JOINT BOARDS OF SELECTMEN

Town of Ayer
1 Main Street
Ayer, MA 01432
(508) 772-8220

Town of Harvard
13 Ayer Road
Harvard, MA 01451
(508) 456-4100

Town of Lancaster
695 Main Street
Lancaster, MA 01523
(508) 365-3326

Town of Shirley
Lancaster Road
Shirley, MA 01464
(508) 425-2600

December 19, 1997

James Chambers
U.S. Army Reserve Forces Training Area
BRAC Environmental Office
30 Quebec St., Box 100
Devens, MA 01432-4429

Dear Mr. Chambers:

I am writing on behalf of the Joint Board of Selectmen to make two requests in regards to upcoming deadlines relative to the consolidating of landfills. These requests were unanimously voted by the Joint Boards at their meeting of December 17, 1997.

The first request is to extend the 45 day review period, currently set to expire on January 22, 1998, an additional 45 days. The second is to request that the hearing date of January 8, 1998 be changed to later in January.

These extensions are critical to the local communities. This is a major issue which we must address and review. The current time frame does not allow us the proper time to do that, especially being the time of year it is. With the holidays upon us, we simply cannot complete a proper review of the situation. The extension of the 45 day review period will allow us time to review the ramifications of this project. The change in the hearing date will allow us the time to review the proposal in further detail so that we may ask the right questions at the hearing.

We understand that you have devoted much time to this effort and thus, we believe that you can understand our need to have this small amount of time to review the proposal further. Your consideration of this matter is greatly appreciated. Please feel free to contact me relative to the request.

Sincerely,

John Petrin, Town Administrator
Town of Harvard - 978-456-4100

JAN 20 1998

COMMONWEALTH OF MASSACHUSETTS

MASSACHUSETTS SENATE

STATE HOUSE, BOSTON 02133-1053

SENATOR ROBERT A. DURAND
MIDDLESEX AND WORCESTER
DISTRICT
ROOM 109C
TEL. (617) 722-1120

ASSISTANT MAJORITY LEADER

January 14, 1998

Jim Chambers
U.S. Army, Reserve Forces
Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Dear Mr. Chambers,

On behalf of the citizens of Ayer, I respectfully request your presence at a meeting to be held in the Ayer High School Auditorium on February 25, 1998 at 7:00pm.

The purpose of this meeting will be to further discuss concerns that were highlighted during the public hearing held on January 8, 1998 at the Devens Conference Center. Army, Department of Environmental Protection and Environmental Protection Agency representatives attending the hearing were not able to answer some of the questions posed by members of the community. This meeting would be an opportunity for all concerned parties to re-address certain issues, particularly the proposed Shepley Hill landfill site.

I look forward to hearing from you. Please let me know if you have any questions.

Very truly yours,

ROBERT A. DURAND
Assistant Majority Leader

Cc: Governor A. Paul Cellucci
Senator Edward M. Kennedy
Senator John F. Kerry
Congressman Martin T. Meehan
Representative Robert Hargraves
Jim Kreidler, Town Administrator, Ayer

Use This Space to Write Your Comments

The Army wants your written comments on all of the options under consideration for dealing with the landfills at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. You can use the form below to send in written comments. If you have questions about how to comment, please call the Devens BRAC Environmental Coordinator, Jim Chambers, at 978/796-3835. Send this form, or any other written comments, postmarked no later than March 8, 1998 to:

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429
Fax 978/796-3133

3·6·98

Dear Mr Chambers,

I think it is a very bad idea to put a new landfill so close to such a populated area. I live near Pirone Park, and I can not believe that the army is proposing to consolidate their old waste so near to my home. The new land fill would be right next to Plow Shop Pond which is conected to Grove Pond which is right next to our well.

You should clean up the existing Shepley Hill landfill not add more waste to that area. I think that you should send the waste out by railroad, as was proposed at the public meeting at Ayer High School

In addition to writing you to let you know that I am strongly opposed to the proposed landfill, I have called my congress men, state representatives and Senator Kennedy. I feel that the proposed landfill is bad for me, my family and my community

Thank you for your attention,
Diane Lee

Comment Submitted by: Diane Lee
Address: 8 Whitcomb Ave
Ayer, MA 01432

FILE COPY

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Nashoba Valley
CHAMBER OF COMMERCE
43 Buena Vista Street • Devens, Massachusetts 01432 • (508) 772-6976 • Fax (508) 772-3503

February 18, 1998

James C. Chambers, Environmental Coordinator
BRAC Environmental Office
Devens Reserve Forces Training Area
Devens, MA 01432

Dear Mr. Chambers:

The Board of Directors of the Nashoba Valley Chamber of Commerce, representing 370 businesses at Devens and in the surrounding communities, wishes to go on record as having concerns about the Army's proposed plan for consolidation of landfills at Devens.

The BCT identified 10 criteria for evaluating landfill remediation options. It is the Board of Director's contention that the proposed plan fails to meet some of these criteria at all.

Most obvious is the need for public acceptance. Residents and elected officials in the town of Ayer have objected vociferously to the possibility of consolidation at Shepley's Hill. They have contributed an extraordinary amount of time to their efforts. They have done extensive research. They remain convinced that the Army's proposed plan will have a negative impact on their town, and have so stated at every opportunity. The Army cannot believe, in light of this strenuous objection, that the proposed plan has met with public acceptance.

Another criterion is "long-term effectiveness." We question whether any proposed solution which does not feature a double-lined landfill cell can be considered to have long-term effectiveness. We also question the Army's failure to include AOC 11 in the consolidation plan. Given the proximity of the site to the Nashua River, we would ask that a more comprehensive analysis of potential environmental hazardous be made available to the public.

Finally, we would note that one of the ten criteria is cost. It is apparent that this criterion has been given undue weight, and that cost has become the deciding factor, much more so than environmental, human health, or economic development concerns. Surely this cannot be the legacy you wish to leave behind as you enter your final years as a member of our community.

Sincerely,

Jacqueline Esielionis
President

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MAR 3 1998

Use This Space to Write Your Comments

The Army wants your written comments on all of the options under consideration for dealing with the landfills at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. You can use the form below to send in written comments. If you have questions about how to comment, please call the Devens BRAC Environmental Coordinator, Jim Chambers, at 978/796-3835. Send this form, or any other written comments, postmarked no later than January 22, 1998 to:

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429
Fax 978/796-3133

1/8/98

We are not in favor of the plan to create a new landfill near Shepley's Hill. We feel that the debris should be moved to an off-site location. The U.S. Army should bear the brunt of this burden, having created the situation and allowing it to exist all these years. The present and future generations of Ayer residents should not have to deal with the potential hazards and risks of having a new landfill so close to our groundwater resources.

Comment Submitted by: Karen + Chris Tarr
Address: 55 Littleton Rd, 8c
Ayer, MA 01432

Ellen & Patrick Kilroy
33 Pine Ridge Dr.
Ayer, MA 01432

Use This Space to Write Your Comments

The Army wants your written comments on all of the options under consideration for dealing with the landfills at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. You can use the form below to send in written comments. If you have questions about how to comment, please call the Devens BRAC Environmental Coordinator, Jim Chambers, at 978/796-3835. Send this form, or any other written comments, postmarked no later than January 22, 1998 to:

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429
Fax 978/796-3133

Because SA12 and AOC41 are potential sources of ecological risks, the alternative chosen needs to include enough debris excavation and testing to insure all significant sources of contaminants are removed.
Suggestions that contaminants at SA12 come from the river need to be better supported by additional information +/or debris removal.

Comment Submitted by: Robert Lidstone
Address: 311 Neck Rd.
Lancaster MA 01523

March 4, 1998

Mr. Jim Chambers
BRAC Environmental Office
30 Quebec St., Box 100
Devens, MA 01432-4439

Dear Mr. Chambers,

We are writing to you to echo the concern of many of our neighbors regarding the Army's proposed plan to consolidate Fort Devens landfills in our town of Ayer. We are very much against this proposal.

First and foremost we are most concerned with the condition of the current Superfund site at Shepley's Hill in Ayer, where the new landfill will be located. This capped landfill which is located near our town wells, has had problems in the past with leaking and we understand it is still leaking. If studies are to show that the current Shepley's Hill landfill is a threat to human health and the environment and something needs to be done to rectify this in the future, we believe putting yet another capped landfill adjacent will hamper any remediation.

We are also concerned about the accuracy and dependability of the Army's proposal to separate hazardous wastes from the landfills before they consolidate at Shepley's Hill. The plan outlined by the Army at the February 25th public hearing did not sound extremely surefire and also to us seems very costly and time consuming. If hazardous wastes were to be accidentally included in the landfill consolidation located in Ayer in the aquifer that serves our town we believe this to be a threat to our drinking water should the landfill leak in the future.

Lastly, we are concerned with the reputation of our town and our property value. We purchased a home in Ayer 5 years ago because we were excited for the future of the town. The closing of Fort Devens and planning for the future in the Ayer schools, the town library, the housing rehabilitation, the look downtown as well as a stronger economy lead us to believe that the town was working toward a more positive place to live. Another questionable landfill from the army so close to downtown, our town park and our drinking water could only be a blemish in our town's struggling reputation.

Again, we oppose the siting of the consolidation landfill in Ayer and urge the Army, EPA and DEP to find an alternative site for the consolidated landfill.

Sincerely,

Graham and Anne Grallert
37 Cambridge Street
Ayer, MA 01432

ANNE SCHWEGMAN
ONE EAST MAIN STREET
AYER, MA 01432
978.772- 6717

March 9, 1998

Mr. Jim Chambers
US Army Environment Office
30 Quebec Street
Devens, MA 01432

Dear Mr. Chambers

I am writing this letter to express my opposition to the proposed landfill in Ayer.

The area in which the proposed site exists is already badly polluted. While this may lend itself to the argument that rather than pollute a new spot, just add to this one; this area is so close to our water supply as well as the homes of residents of Ayer, this argument cannot be supported. I am in support of transfer by rail to an alternate spot. This would remove the risk of pollutants seeping into our water supply and allow this area to further repair itself from past pollution.

I attended the public hearing on Wednesday February 25 and appreciate the Army Corp of Engineers interest in listening to other alternatives. I was concerned by several panel member's nods of agreement when it was mentioned that we had to deal with this locally because it was our mess. This is not Ayer's mess, but the Army's; which we as a Nation must deal with. I don't believe the best spot in the Nation to put this waste is right next to Ayer's water supply. Furthermore, I do not believe this is the legacy that the Army wants to leave the people of Ayer, who supported Fort Devens for so long.

I have been a member of the community for the past three years, and have watched Ayer grow and recover from the closing of the Fort Devens. My husband and I believe that Ayer has a great future ahead, which is one of the reasons we chose to live here. The proposed landfill is not good for the community of Ayer, and we urge your group to seek other alternatives.

Sincerely,

Anne Schwegman

March 5, 1998

Jim Chambers
U. S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens MA 01432-4429

Dear Mr. Chambers,

I would like to submit my comments regarding the Army's Proposed Plan for Study Areas 6, 12, and 13, and Areas of Concern 9, 11, 40 and 41.

Over the last three years I served as a member of the Ayer Comprehensive Plan Committee (ACPC), a group of town officials, businesspeople, and residents who met with consultants to develop the town's comprehensive master plan. This plan was adopted at Town Meeting in October 1997. Below are excepts from the Executive Summary of the Plan.

Vision Statement

> "The citizens of the Town of Ayer recognize the town's natural beauty and attractive open spaces, its quality of life, and the diversity of its neighborhoods. Our vision for the future of the town is to build on and strengthen our unique downtown, our strong industrial and commercial base, while protecting our environmental resources."

The very first item in the section of the plan entitled Natural Resources, Open Space and Recreation Implementation Recommendations is

> "Develop strategy to remediate water quality problems in Grove, Long and Plow Shop Ponds and continued discussions with Devens Commerce Center regarding the cleanup of Grove and Plow Shop Ponds."

As a member of the ACPC, I believe it is my responsibility, on behalf of the residents of Ayer who voted for the new master plan, to voice my opposition to the Army's proposal construction of a new consolidated landfill near the existing Shepley's Hill Landfill site. Shepley's Hill Landfill is already a Superfund site and it doesn't make sense to dispose of any more questionable material near this site. It also doesn't make sense to me to construct a landfill anywhere near Grove Pond or Plow Shop Pond that would adversely effect the aquifer and the water quality of the town of Ayer.

Sincerely,

Ruth Rhonemus

Ruth Rhonemus
8 Oak Street
Ayer MA 01432-1620

P.O. Box 77
Harvard, MA 01451

March 5, 1998

James Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Dear Mr. Chambers,

I am a resident of Harvard, past member and chairman of the Harvard Planning Board, and member of Devens Water Resources and Open Space task forces. First I would like to thank you and the Army for the several opportunities you have provided for public comment. I have spoken at both the January, 1998 and February, 1998 public hearings. This letter is to confirm my prior comments.

The Nashua River and its underlying aquifer are significant - if not the most significant - natural resources in the region. The aquifer supports existing and future public water supplies. The wetlands associated with the River provide flood control. The River network provides important wildlife habitat for many species - some of which are federally or state threatened or endangered. The River also is a regional recreational resource.

The Army's activities on Ft. Devens have resulted in the seven landfill sites being considered in the Army's Proposed Plan, dated December 1997. With the exception of SA 6, the 19th century farm site, these sites are located either within the Nashua River's floodplain, in wetlands which drain into the River, on upgradient slopes which drain into the River, or in areas which have the potential to contaminate the aquifer and public water supplies.

In short, six of the seven landfills (AOC's 9, 11, 40, and 41, and SA's 12 and 13) <u>all</u> presently impact a significant regional resource. My comments are directed to the proposed treatment of these six landfills.

The Army's rationale for leaving SA 12 and AOC 41 essentially intact (minimal surface clean up by Army personnel) is the lack of human activity *on the site*, which is now part of the reserve training area and will become part of an expanded Oxbow NWR. The fact that contaminants beneath the surface will continue to impact a *regional* water resource has been overlooked.

Let me remind you that water flows - it moves - it does not stay put. Contaminants in its path will, likewise, move.

The Army's rationale for leaving AOC 11 essentially intact (again minimal surface clean up) is the same: lack of human activity *on the site*. <u>It's in a floodplain</u>! By federal, state and local law, there can be no building in a floodplain. Again, the contaminants left below the surface will be subject to inundation of flood waters and rising ground water, and they will travel downstream, continuing to pollute the River and downstream water supplies.

And, as if to add insult to injury, AOC 11 was created in violation of the federal Clean Water Act and state Wetlands Protection Act which prohibit fill of wetlands. The Army, a federal agency, simply chose to ignore federal and state law. And now, the Army is choosing to ignore enforcement of federal requirements under this law to clean up and restore damaged wetlands. What does this action (or rather inaction) say to those who are

required to comply with federal and state laws or face civil and/or criminal charges and penalties?

When I first got involved in the landfill clean up and consolidation matter last summer, it was at the request of MA DEP and EPA. At that point the Army was insisting on only capping in place the 7 landfills. No removal. No consolidation. No proper disposal. MA DEP and EPA wanted all seven sites removed and consolidated. Through the efforts of many concerned citizens and organizations, the Army's plan was modified to the present proposal. But why the incomplete clean up? Apparently cost. And what is the difference in cost (if you accept the Plan's estimates)? The proposed plan: $17.3 million. Clean up of six of the seven sites, the six sites that impact the water resources? Not given. Not even considered. The Army was willing to remove and consolidate all of the sites (including the farm site), except for AOC 11 (the one in the floodplain, in violation of the federal Clean Water Act) at a total cost of $18.1 million (alternative 8). Removal and consolidation of all seven: $20.2 million (alternative 9). $3 million more to do the job right. Is protection of the River, its wetlands, and the aquifer - an incredible regional resource - not worth it?

We have spent decades and millions of dollars and untold millions of volunteer hours cleaning up the Nashua River. It is an international success story. The Army should not be allowed to walk away from Devens with 3 landfills remaining in the wetlands or floodplain of the Nashua. In addition to the removal and consolidation of SA 13, AOC's 9 and 40, the Army must remove and consolidate SA 12, and AOC's 11 and 41. And all the impacted wetlands must be restored.

The second major component of the Proposed Plan is the location of a consolidated landfill site for the removed debris. Several suggestions have been put forward at the hearings. It is clear the site adjacent to Shepleys Hill Landfill is <u>not</u> appropriate and I applaud the Army for considering alternatives. Let me suggest here, as I have in the past, that the Army look at the <u>entire</u> Main and North Post area for a consolidation site. When developing the Reuse Plan the need to reserve an area for a consolidated landfill site was not raised (in spite of the Army's obligation to clean up the 50+ identified contaminated sites). Therefore, to preclude <u>all</u> of the development zones from consideration (in the name of adhering to the Reuse Plan) is inappropriate and disingenuous. I cannot believe a 15-acre site could not be found that would be more environmentally sensitive than the present proposed site (i.e. not over the aquifer). Once stabilized, I believe the landfill could support a parking area, open space between buildings and development (in keeping with the present campus-like feel of Devens) or a playing field. I do not believe all on-site possibilities have been exhausted and would urge the Army to continue a public process for resolving this matter. Personally, I would not endorse removing the debris from Devens (to someone else's backyard or sensitive resource area), so long as an <u>environmentally sound</u> alternative can be found here.

To summarize, I urge the full excavation, removal and restoration of AOC's 9, 11, 40 and 41 and SA's 12 and 13, and the establishment of a consolidated landfill site which is not located in an environmentally sensitive area or over a critical resource such as the Devens aquifer.

Thank you for this opportunity to comment.

Sincerely,

Lucy B. Wallace

Lucy B. Wallace

Citizens to Protect Residential Harvard
P.O. Box 424
Harvard, Massachusetts 01451

March 4,1998

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Dear Mr. Chambers:

I am writing representing the 200+ families who make up the membership of Citizens to Protect Residential Harvard (CPRH). We continue to be concerned with the number and composition of landfills at Devens and what the future treatment of these landfills will be. After attending the past two hearings concerning the landfills, we question the feasibility and completeness of the remediation plan currently being considered.

Our concerns center around several considerations: 1) the choice of the Shepley Hill site as the location of the consolidated landfill; 2) the effectiveness and completeness of the remediation plans for several of the sites.

The Choice of Shepley Hill
Concerning the choice of the Shepley Hill site, it seems marginal at best. To begin with, the total lack of acceptance by the town of Ayer should disqualify the site according to the ten criteria set forth. In addition, with the amount of available acreage at Devens, there is little reason to put the landfill on the regional aquifer. It is imperative that the region's aquifer and water ways are preserved and protected. Our limited understanding of aquifers is that it is not well understood precisely how they work, despite your water flow modeling, it would be short sighted and an unreasonable risk to endanger the aquifer. This is particularly true because, as the "blue map" makes so obvious, overall a substantial amount of "white area" exists.

We understand that much of this land is considered to be off limits due to its location in the Redevelopment area, but that is a surmountable obstacle, particularly because the land will be returned to the towns in the future. In addition, this type of need was never mentioned at the planning charrettes or land could have been zoned and set aside for it. Surely the Devens Commerce Center can spare, however unwillingly, twelve acres out of the 2,355 acres temporarily transferred to it. And surely, this land can be placed in far proximity to aquifers, residences or businesses. Or, since the DOD created the landfills, a

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consolidated landfill might be put on the 5,220 acres on the Devens Reserve Forces Training Area.

Certainly the town of Ayer has put together an interesting proposal concerning the disposal of all of the landfill material by rail to an off-site landfill. It is possible that this could be a viable solution, and is an option well worth examining as it meets the desires of both the town of Ayer and the Landbank, seems economically feasible, and allegedly could be completed in a shorter time frame. We do appreciate the Army's willingness to further research such an option. However, as attractive as this proposal might be for the immediate region, we do find it unfair to shift local burdens to another community. Certainly great care would have to be taken to insure that the material is acceptable to the receiving community and would be adequately disposed of in a double lined landfill.

Remediating the Individual Sites

CPRH joins the Massachusetts Audubon Society, US Fish and Wildlife Service, and People of Ayer Concerned about the Environment (PACE) in the request to completely excavate and clean up AOC 11 on the Main Post, SA 12 on the South Post, and AOC 41 on the South Post. We feel that the removal of only the surface debris is inadequate, especially since two of the sites (SA 12 & AOC 41) required CERCLA action.

We are very concerned with AOC 11, with its high concentrations of DDT, due to its close proximity to the Nashua River. (This landfill is particularly disturbing since its creation took place well after the implementation of the Clean Water Act.) We also question whether SA6 does require remediation, as well as any other landfills that may exist on the South Post.

Screening for Hazardous Materials

We were very disappointed at the Jan. 8th hearing to hear the lack of foresight and technical planning that had been given to the issue of testing the landfill material for toxicity. Obviously, the determination of what material would be shipped off-site and what material would be consolidated in the proposed Shepley Hill landfill is of utmost importance.

We were pleased to see the issue addressed in more depth at the February 25th hearing. However, we question the screening process. For example, the lot sizes of material to be tested for hazardous waste were estimated to be 250 to 1000 cubic yards each. This large lot size makes one wonder how effectively testing really will be. How effective can the on-site testing be in a world where 70,000 different chemical compounds exist, and what is the timing of the tests? It was stated that about 10% of the samples will be shipped for off-site lab analysis; is that a sufficient amount?

In summary, it is imperative that the DOD undertake the responsibility of a complete excavation of the landfills located on the North, Main and South Posts in a timely fashion. However, there is no point in rushing to a decision before fully exploring all the possible options. The current plan put forward is one

possibility but is not necessarily the best answer. Since you stated at the Feb. 25 meeting that there is no danger of losing funding based on a delayed decision, there is no reason to settle for less than an optimum strategy.

Thank you for the opportunity to give input.

Sincerely,

Sarah Van Vleck
President

cc:
Senator Edward Kennedy
Senator John Kerry
Rep. Marty Meehan
Senator Robert Durand
Rep. Geoff Hall
L.Nehring - PACE

March 2, 1998

Mr. James Chambers
U.S. Army Reserves Training Area
BRAC/Environmental Office
30 Quebec Street
P.O. Box 1000
Devens, MA 01432-4429

Dear Mr. Chambers:

This letter is being written to express the feelings of residents of Ayer, Massachusetts who have been unable to attend the "consolidation" public meetings and voice their desires. This letter is expected to be part of a public record.

In our opinion, the only acceptable and moral action is to remove the present landfills to an OFF SITE location.

The potential harm to human lives and wildlife are apparent. We want our children and grandchildren to live in a safe community. There is enough to worry about with drugs and other evils of the world. We should not have to worry about whether or not there may or may not be a leak in a landfill, whose suggested location is 1800 feet from a playground where children and adults will gather to enjoy outdoor activities and 2900 feet from our current drinking water facilities.

What needs to be taken into consideration is that money may be saved now, but in the future, the possibility of millions of dollars will be spent if something should happen to the landfills. What will happen to the many families who are potentially endangered by this hazardous waste if someone in their family should get sick, like in Woburn and Groton. Who is going to take care of them and make sure their family is cared for? The Army and or U.S. Government?

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It was proclaimed that their would be annual/semi-annual testing of the landfill site. What happens during the period that it isn't tested? What happens if something leaks and is not detected until six months later? In addition, it was stated that the hazardous material would be separated from the non hazardous material. Who is to say that all of the hazardous waste will be removed? What if they miss some? How does the Army and/or responsible persons intend to separate what is hazardous and what is not hazardous. What is defined to be hazardous and non-hazardous? Who is going to separate it?

As a result of the meeting on February 25, 1998, we have been led to believe that one of the current landfills is leaking because of a statement that a gentleman (resident) made, "the orange goo looked almost pretty if we did not know how ugly it really was." "Please clean it up," Who is to say that this would not happen to the "consolidated landfill?" Is the landfill that is leaking even considered to be 1 of the 7?

In addition, a gentleman from the Department of Fish and Wildlife stood up and declared that the only acceptable move would be to relocate the hazardous material to an off site location. Why should there even be a question of what the moral action would be? Due to the potential harm that these landfills portray, why is "the budget" the first priority instead of human life and wildlife?

Ayer is an upcoming town. Many of the undersigned have moved here within the last five years. People looking for a place to reside and raise their children will not consider Ayer, if Ayer is known to have possible toxic landfills. It would be a stereotyped town such as Woburn and Groton. Not to mention that our property values will go down.

Is our only alternative that we must be forced to make a decision to move out of Ayer in order to provide a safe environment for our children and grandchildren to grow up in?

This letter is also being written for the other residents of Ayer who have not voiced their opinions either by mail or at the meetings. We believe that there are others that are truly concerned as well, but have not gone to the meetings or written a letter.

We are aware of the positive relationship between all parties involved and we are grateful that we are allowed to take part in this very serious issue. A written response would be appreciated. Thank you for your attention to this matter.

cc:

Kernel Edward Murdough
Mr. James Bryne, EPA
Mr. John Regan, DEP
Mr. James Kreidler,
Ayer Board of Selectman

Senator Robert Durand
Ms. Laurie Nehring, PACE
Representative Martin Meehan

Patricia Johnson	41 Atherton St. Ayer
Rick Johnson	41 Atherton St Ayer
[illegible]	13 Robbins Rd. Ayer
[illegible]	13 Robbins Rd Ayer
[illegible]	13 [illegible] Ayer
[illegible]	44 [illegible] Rd

Maura E. Fallon	12 Pingry Way
Edward K. Fallon	12 Pingry Way
Laura Jean Silva	44 Groton Harvard Rd.
Laura Wilkins	55 Littleton Rd. 23-C
Brian Moore	76 West Main St.
J. Ciampanese	20 Groton School Rd
Gary Fiennaran	234 Snake Hill Rd.
Kristin O'Brien	29 School House Village Circle
Jean McKenna	42 Groton Harvard Rd
Tim McKenna	42 Groton Harvard Rd

Mark Volavola	71 Sandy Pond Rd

THE JOINT BOARDS OF SELECTMEN

Town of Ayer
1 Main Street
Ayer, MA 01432
(978) 772-8220

Town of Harvard
13 Ayer Road
Harvard, MA 01451
(978) 456-4100

Town of Lancaster
695 Main Street
Lancaster, MA 01523
(978) 365-3326

Town of Shirley
Lancaster Road
Shirley, MA 01464
(978) 425-2600

March 9,1998

Mr. James Chambers
U. S. Army, RFTA
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

RE: Non support of Army's proposed landfill consolidation plan.

Dear Mr. Chambers,

The Joint Boards of Selectmen from the towns of Ayer, Harvard and Shirley do not support the Army's proposed plan for landfill consolidation. Our official position regarding the Department of the Army's proposed plan for landfill consolidation at the former Fort Devens, as voted at our March 4, 1998 meeting, is as follows:

1. We support a plan of action that removes all risk for human health and the environment associated with the landfills on Devens.

2. Our submitted plan involves excavating AOC 9, SA 13 and AOC 40 and doing site remediation on SA 6 and SA 12 and removing all of the excavated material to an off-site facility.

3. We believe that additional study should be done on AOC 11 and AOC 41 to determine if limited removal is appropriate or if a complete removal to an off-site facility is the better option. It is our belief that both AOC 11 and AOC 41 pose a risk to human health and the environment. Because AOC 11 is directly effecting the Nashua River, and because AOC 41 may be effecting the Nashua and/or Still River and is relatively small in total cubic yards, we strongly urge you to give them further consideration.

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Please see that this becomes a part of the official record under the public comment period. Thank you.

If you have any questions please feel free to contact either myself, John Petrin in Harvard at (978) 456-4100 or Tom Linden in Shirley at (978) 425-2600.

Sincerely,

James M. Kreidler, Jr.
Ayer Town Administrator
On Behalf of the Joint Boards of Selectmen

Cc: Sen. Kennedy
Sen. Kerry
Rep. Meehan
Gov. Cellucci
Sen. Durand
Rep. Hargraves
Rep. Hall
Rep. Walrath
Town's Files
Mike Hogan, MDFA
RAB
PACE
Nashua River Watershed Association

Use This Space to Write Your Comments

The Army wants your written comments on all of the options under consideration for dealing with the landfills at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. You can use the form below to send in written comments. If you have questions about how to comment, please call the Devens BRAC Environmental Coordinator, Jim Chambers, at 978/796-3835. Send this form, or any other written comments, postmarked no later than January 22, 1998 to:

pg 1 of 2

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429
Fax 978/796-3133

I also am in favor of complete remediation of SAs 6, 12 and 13 and AOCs 9, 11, 40 and 41.

Furthermore, I think that it is absolutely ludicrous for the U.S. Army to propose siting the consolidated landfill above one of our high yield aquifers. After several years of studies, I am shocked that the proposed site for the consolidated landfill is the best proposal that the U.S. Army could make. I have more faith in the U.S. Army than that and challenge it to do better.

Lastly, the proposed consolidated landfill is too close to the center of our Town of Ayer. It is 2,700 feet from where I take the train to work each day, 2,700 feet from where I sit and drink coffee on Sat. & Sunday, and 2,200 feet from Pirone Park where

— See pg 2

Comment Submitted by: Jane W. Sullivan
Address: 79 East Main St.
Ayer, MA 01432
Mailing: POB 1195, Pepperell, MA 01463

W9704009T

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Use This Space to Write Your Comments

The Army wants your written comments on all of the options under consideration for dealing with the landfills at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. You can use the form below to send in written comments. If you have questions about how to comment, please call the Devens BRAC Environmental Coordinator, Jim Chambers, at 978/796-3835. Send this form, or any other written comments, postmarked no later than January 22, 1998 to:

pg 2 of 2

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429
Fax 978/796-3133

my future child will play. Remoteness of a consolidated landfill is necessary to minimize the risk to the health and safety of my family and my neighbors in the Town of Ayer.

Comment Submitted by: Jane W. Sullivan
Address: 79 E 1st Main St
Ayer MA 01432
Mailing: POB 1195, Pepperell MA 01463

Use This Space to Write Your Comments

The Army wants your written comments on all of the options under consideration for dealing with the landfills at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. You can use the form below to send in written comments. If you have questions about how to comment, please call the Devens BRAC Environmental Coordinator, Jim Chambers, at 978/796-3835. Send this form, or any other written comments, postmarked no later than January 22, 1998 to:

page 1 of 2

Jim Chambers
U.S. Army, Reserve Forces Training Area
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30 Quebec Street, Box 100
Devens, MA 01432-4429
Fax 978/796-3133

First, I would like it to be known that I am for complete remediation of SAs 6, 12 and 13 and AOCs 9, 11, 40 and 41.

Second, I am vehemently opposed to the U.S. Army's proposed site for the consolidated landfill. It is absurd that the consolidated landfill site be proposed for an area directly above one of our area's high yield aquifers. The Town of Ayer has been under a water ban for more than 1 year and the pressure to find new sources for drinking water mount as our Town continues to grow. We just can not jeopardize or subject one of our high yield aquifers to the risk posed by the consolidated landfill. As we all know, landfills leak. So the only question is when will the proposed consolidated landfill leak!

- see pg 2

Comment Submitted by: Cornelius F Sullivan
Address: 79 East Main St
Ayer, MA 01432
Mailing Address: P.O. Box 1195
Pepperell, MA 01463

W9704009T

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Use This Space to Write Your Comments

The Army wants your written comments on all of the options under consideration for dealing with the landfills at SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41. You can use the form below to send in written comments. If you have questions about how to comment, please call the Devens BRAC Environmental Coordinator, Jim Chambers, at 978/796-3835. Send this form, or any other written comments, postmarked no later than January 22, 1998 to:

page 2 of 2

Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429
Fax 978/796-3133

Third, the site for the proposed consolidated landfill is not remote enough. It is within 2,200 feet of the commercial district, a park, churches & daycares in the Town of Ayer. Remoteness of such a site would help to minimize the potential risks to human health and safety. A mere 2,200 feet from the "heart" of the Town of Ayer is not acceptable remoteness.

Fourth, the existing Shepley's Hill landfill is in need of remediation and is polluting Plow Shop Pond. Both Plow Shop and Grove Ponds are slated for Superfund clean-up. As a taxpayer, it simply does not make sense to spend federal money to clean-up Plow Shop and Grove Ponds and then build a new landfill nearby that may jeopardize the effort or longevity of any clean-up of those ponds.

Comment Submitted by: Cornelius F. Sullivan

Address: 79 East Main St.
Ayer, MA 01432
Mailing Address: P.O. Box 1195
Pepperell, MA 01463

W9704009T

Town of Shirley
BOARD OF SELECTMEN

POST OFFICE BOX 455 SHIRLEY, MASSACHUSETTS 01464-0455 (508) 425-2600
FAX (508) 425-2602

6 March 1998

Jim Chambers
U. S. Army Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Subject: Proposed Clean-up Plan (Consolidation) of Landfills at Devens

Dear Mr. Chambers,

With this letter we respectfully submit two (2) comments on behalf of the Town of Shirley regarding the above matter.

One comment is from Independent Environmental Consultants, Inc. This firm was retained by the Town for the purpose of providing an objective expert analysis of the Army's proposal. Both the Shirley Water District and our Board of Health have had input into this report.

The second letter was provided to us by the Town's Devens Task Force. The Task Force was appointed by our Board to assist us in Devens/Town matters and has studied the Army's proposal over a period of time.

Please know that both of these comments carry our unanimous endorsement and support.

Thank you for your attention and consideration.

Very truly yours,

BOARD OF SELECTMEN

by Bruce MacDonald

Bruce MacDonald
Chairman

encs. (2)

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MAR 9 1998

INDEPENDENT ENVIRONMENTAL CONSULTANTS, INC.

P.O. Box 178
South Orleans, MA 02662
(508) 240-6811

March 4, 1998

James Chambers
United States Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Re: Consolidation of Landfills
SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41
U.S. Army, Reserve Forces Training Area
Devens, MA

Mr. Chambers:

This letter has been prepared by Independent Environment Consultants, Inc., on behalf of the Board of Selectmen and Water District for the Town of Shirley, MA. This comment letter concerns the proposal for the consolidation of landfills at For Devens. The current proposals is to consolidate seven landfills at Sheply Hill in Ayer, MA. One landfill already exists at the Shepley Hill site in Ayer, MA.

The major concern for the Town of Shirley is that the alternative site for this consolidation of seven landfills is within the North Post section of Fort Devens. The proposed site within the North Post for the consolidation of landfills is located north and upgradient of the existing Patterson well site, and the proposed Walker well site for the Town of Shirley. The two well sites are located just north of Morse Brook and to the west of Walker Road. The major environmental concern for the Town of Shirley is the potential pollution of the selected land for the existing well and a proposed well located south and downgradient of the North Post area. These well sites contain the future water supply of potable drinking water for the residents of Shirley. The Patterson well currently produces 380,000 gallons per day of potable water, and the proposed Walker well will produce 500,000 gallons per day of potable water. The existing water quality of the groundwater within the Patterson well and the proposed Walker well is excellent. The high water quality rating of this well water/groundwater requires very little treatment by the town. This selected land for municipal wells for drinking water is the best location within the Town of Shirley in terms of overall available groundwater supplies, and overall water quality. Groundwater is the sole source of water for the Town of Shirley. The protection of this valuable aquifer system in this section of town, and the protection and preservation of the water quality of the groundwater within this aquifer is a priority for the Town of Shirley. Contamination of the groundwater and soils within this selected land for

the existing well and future wells, and the potential contamination of this municipal water supply would be an environmental disaster for the Town of Shirley. It should be noted that the environmental data and environmental mapping of all contaminated areas within the North Post from past military operations is not complete.

The existing town well and the proposed town well are located south and downgradient of the North Post, and the North Post area is within the groundwater recharge zone for both of these municipal wells. According to the available environmental data from the Shirley Water District, the physical location of the Patterson well and the Walker Well is within land that contains significant volumes of groundwater within the aquifer available for withdrawal to supply the future water needs of the town. This land area has been assessed as having the best available groundwater supply within the town. The existing water quality of the groundwater contained within the aquifer system is classified as having a high water quality rating. Due to the overall quantity of water within the aquifer and the high water quality rating of the water, the preservation of this valuable natural resource is of prime concern to the town.

The consolidation of landfills within the North Post would locate these landfills just north of the Patterson well and the Walker well. The placement of dump and landfill materials within the North Post area could result in significant negative environmental impacts to the existing aquifer and the water quality of the existing groundwater. Degradation of the existing soils and the groundwater system within the North Post, and contamination of the valuable aquifer system, will directly impact the water supply for the Town of Shirley. Existing geohydrology reports, groundwater flow data, soils data, and environmental mapping of groundwater within the subject aquifer, indicates that groundwater flows in a south and south easterly direction from the North Post toward the Patterson well and the Walker well. In terms of the total aquifer coverage, the actual physical limits of the aquifer (saturated soil zone) within the North Post area is still in question at this time. The aquifer may include other additional lands within the North Post area not shown on the existing Devens area aquifer and wells map (GIS). In regards to the North Post, any risk of negatively impacting the existing groundwater within this aquifer system is a concern for the town, and the town's existing and future water supply, since the North Post is within the groundwater recharge zone of the town's wells. Again, the sole source of drinking water for the residents of Shirley is groundwater from the municipal wells, and these town wells are within the same aquifer system that underlies the North Post.

Traffic impacts from the trucking of landfill materials to the alternative North Post landfill consolidation site would also be a major issue for the Town of Shirley. The overall impact to the town from increased traffic volumes, road and traffic safety concerns, impacts to existing infrastructure, noise impacts, and cumulative impacts to residential neighborhoods would be significant. Increased traffic volumes including numerous large trucks for the purpose of hauling landfill materials would negatively impact the existing traffic patterns, roadways, and living conditions within the town.

In conclusion, the major concern of the Town of Shirley for the current proposal for the consolidation of landfills at Fort Devens (SAs 6, 12, and 13 and AOCs 9, 11, 40 and 41), is the alternative site for consolidation within the North Post. Potential negative environmental impacts to the existing aquifer from landfill consolidation within the North Post, and from other contamination sources within the North Post, will create environmental impacts to the Town of Shirley's municipal wells. These municipal wells which are the sole water supply for the town are located south and downgradient from the North Post. This alternative site for landfill consolidation within the North Post is a major environmental concern for the Town of Shirley.

If you have any questions, do not hesitate to contact me.

Very truly yours,

Paul J. Shea, P.W.S.
President

Jim Chambers
U.S. Army Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, Ma. 01432-4429

Re: Consolidated Landfill Sites, Superfund Program

Dear Mr. Chambers:

The Devens Task Force of Shirley, Ma., submits the following comments on the Landfill Options under consideration for SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41.

The Army has proposed, under CERCLA, to consolidate the landfills at AOC 9, 40, and SA13 to an area abutting the current Shepley's Hill Landfill. The alternate site for this consolidated landfill is AOC9 on the North Post. We feel there are significant problems in siting this landfill in either area. Although we support consolidation, we feel that another site must be considered. These landfills should be excavated and removed to another site, even if that site is off-base.

The Army uses USEPA's nine criteria to decide on a cleanup option. According to these criteria the proposed plan must first take into account 'the overall protection of human health and the environment'. Both the Shepley's Hill site and the North Post site sit on high and medium yield aquifers. The possible contamination of these aquifers would endanger the water supply of the Towns of Shirley, Ayer, and the redevelopment of Fort Devens.

The intended cleanup must also comply with Applicable or Relevant and Appropriate Requirements. These ARARs are the state and federal environmental statutes, regulations and requirements. In both areas, Shepley's Hill and the North Post, the consolidated landfill would not conform with the ARARs. DEP regulations do not permit siting of landfills in wetlands and floodplains, within the groundwater table, or over productive or potentially productive aquifers.

The cleanup proposal must also have long term effectiveness and permanence. The geomembrane which will form the lining of this landfill will not last forever. Even if the geomembrane lasts for 30 or 50 years, what happens then? The North Post and the Shepley's Hill site lie atop of medium and high yield aquifers. If the geomembrane is compromised, so is the drinking water of Shirley or Ayer. This is not a chance the government should be willing to take. It seems clear that another site should be explored which would not hold the possibility of a regional disaster.

The remedial alternatives must consider implementability. In the case of the North Post, the problems with access still exist - there is no paved road into this area. Also the proximity of AOC9 to the infiltration beds for the waste water treatment facility would put the rebuilding of the waste water facility in jeopardy. In the case of the Shepley's Hill site, the presence of historic liquid waste lagoons put this site in question. These lagoons were buried by the Army but were not removed. Further study is warranted to determine if the Shepley's Hill Consolidated Landfill Site qualifies as it's own AOC requiring remediation.

Community acceptance of this project is the last of the nine criteria which needs to be met. The North Post sits in the middle of a rural residential neighborhood. Siting of a consolidated landfill in this area would impact the use of nearby private and municipal wells. Shepley's would be located within one-half mile or less of homes, Pirone Park, and downtown Ayer. We hope the Army will consider the human costs when making their final decision of a landfill site.

Sincerely yours,

cc: Gov. A. Paul Cellucci; Sen. Robert Durand; Rep. Patricia Walrath; Rep. Robert Hargraves; Rep. Geoff Hall; Sen. Edward Kennedy; Sen. John Kerry; Rep. Martin Meehan; Ayer board of Selectmen; Harvard Board of Selectmen; Jim Byrne, EPA; Lynne Welsh, MADEP

National Wildlife Refuge Association

Dedicated to the protection and perpetuation of the National Wildlife Refuge System

c/o Great Meadows NWR
Sudbury, MA 01776

March 5, 1998

James Chambers
BRAC Environmental Coordinator
AFZD-DEC
Department of the Army
Devens, MA 01433-5010

Dear Mr. Chambers,

On behalf of the National Wildlife Refuge Association (NWRA) I am registering our opposition to the Army's current proposal for remediation of the seven landfill areas on Fort Devens' land, or former Fort Devens' land, in the towns of Ayer, Harvard, Lancaster, and Shirley. The areas are designated AOC's 9, 11, 40, and 41 and SA's 6, 12, and 13. The NWRA is a national conservation organization dedicated to protecting and preserving the National Wildlife Refuge System and to increasing public understanding and appreciation of this System which includes over 500 refuges and embraces 92 million acres.

Currently, the Army's clean up proposal is to: 1) dig up and relocate debris from AOC's 9 and 40 and from SA 13; 2) remove all visible man-made surface debris from AOC 11 and SA 12; and 3) no action under CERCLA at the South Post sites (SA's 6 and 12, and AOC 41). Again, at AOC 11 and SA 12 you intend to remove all visible surface debris.

The NWRA agrees with the proposed action for AOC's 9 and 40 and SA 13. WE DO NOT AGREE with the proposed action for AOC's 11 and 41 and SA 12. Our concern, of course, is the impact upon the nearby Oxbow National Wildlife Refuge and the wildlife it supports. All thee sites are environmentally sensitive. AOC 11 is immediately adjacent to lands that will soon be transferred to the jurisdiction of the U.S. Fish and Wildlife Service for management as part of the Oxbow NWR. AOC 41 and SA 12 are in the South Post area. And current law directs that South Post will become part of the Oxbow NWR "when, and if, it is excessed by the Army." Yes, we have an interest.

We are most surprised that EPA and MA DEP are endorsing the Army's current proposal, given their previous position on all these sites. CERCLA, or Superfund Law, requires site remedies that are protective of human health and the environment. Also, it appears the requirements of the federal Clean Water Act and the state Wetlands Protection Act are not being met. AOC 11 is a wetland along the Nashua River and has elevated concentrations of DDT in surface soils, subsurface soils, and wetland sediments. There are also traces of PCB's, heavy metals and other potentially dangerous materials at this site. SA 12 is within the Nashua River floodplain and AOC 41 is but 100 feet from New Cranberry Pond.

What is especially egregious about the Army's current proposal, and EPA's and MA DEP's "go along" position, is that it appears that AOC's 11 and 41 and SA 12 were done in violation of our wetlands laws - section 404 of the Clean Water Act and the state Wetlands Protection Act. And who are supposed to assure compliance with the laws? For the federal law, the Army Corps of Engineers and EPA; for the state, the MA DEP. The protectors are the violators.

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Thus, there is a special responsibility here for the Army, EPA, and MA DEP to clean up the mess you created and/or permitted. The problem demands complete remediation of all sites. Cost should not be the overriding consideration. Protect our lands, our water, our wildlife, and our people. Undo the damage you have done.

Sincerely,

William C. Ashe
President

cc: Senator Edward M. Kennedy
Senator John A. Kerry
Congressman Marty Meehan
Ronald Lambertson, Regional Director, U.S. Fish and Wildlife Service
Bud Oliveira, Refuge Manager
Trudy Cox, Secretary, Office of Environmental Affairs
Nashua River Watershed Association
Massachusetts Audubon Society
David Tobin, NWRA

Nashua River Watershed Association

592 Main Street, Groton, Massachusetts 01450-1230
Tel: 978/448-0299 Fax: 978/448-0941
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Groton, MA
Paul Routhier
Littleton, MA
Steve Slarsky
Ayer, MA
Wagner
Pepperell, MA
Lucy Wallace
Harvard, MA

Executive Director:
Elizabeth Ainsley Campbell

February 18, 1998

James Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental. Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Re: Proposed Plan for SAs 6, 12 & 13, and AOCs 9, 11, 40 and 41

Dear Mr. Chambers:

On behalf of the Nashua River Watershed Association, I would like to provide comments on the proposed plan for addressing the seven existing landfills on the decomissioned Fort Devens Army base. As you know the Nashua River Watershed Association has followed this process closely and has been active in seeking a final solution that will ensure that the future health of the Nashua River and its related aquifers are not further jeopardized. The NRWA supports much of the proposed final plan that the Army has put forth. However, the NRWA fully expects the Army to adhere to the highest of standards and the fullest vigilance when proceeding with proposed clean ups.

The NRWA agrees that AOC's 9 and 40 and SA 13 should be fully excavated and removed to a consolidated waste site. It is essential that all hazardous material be removed from these sites separately and disposed of at licensed off-site facilities. The sites should be monitored long term, especially in light of the disturbance resulting from the removal.

Though the NRWA believes that surface debris at AOC 41 and SA 12 should be removed, the fact that wetlands were filled at these sites demands a more appropriate remedy: complete removal of all debris, leaving the sites without any further possibility of continuing to harm water resources. It is hard to believe that the short term affects of performing such clean-up is not offset by the long term gains of finally removing this debris from an area where it should not have been deposited in the first place. Long term monitoring of these sites is also appropriate. AOC 11 should also be completely excavated. Given the nature of

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the area prior to the creation of this site, long term monitoring is not only appropriate, but absolutely necessary. It should go without saying that <u>any</u> hazardous materials must be screened and removed off site.

Finally, although initial information suggested that the proposed consolidated waste site adjacent to the existing Shepley's Hill landfill was safe and appropriate, the NRWA now believes that the strength of the existing information suggests otherwise. Not the least important of this information are monitoring results that suggest continuing problems with the Shepley's Hill landfill. It is inherently wrong to place another landfill next to an existing landfill that poses continuing monitoring and contamination problems. It may well become impossible to guarantee whether the integrity of the new consolidated landfill is intact, while experiencing varying monitoring results from the adjacent existing landfill. The NRWA also believes that the proximity to the Ayer water supply poses a significant amount of potential risk, regardless of the perceived underground water flow and the claimed safety of the double lined surface, and that placement elsewhere on the Devens compound or at some off-site location is more protective of the Town of Ayer.

The NRWA respectfully submits these comments with the hope that the Army will go the extra steps necessary to eradicate problems arising from failure to take adequate care during its stewardship of Devens. This is the least that can and should be expected of an agency entrusted with public lands.

Sincerely,

Robert A. Levite

Robert A. Levite
Natural Resources Director
Member, Restoration Advisory Bd.

cc: Senator Robert Durand
James Byrne, EPA
Lynn Welsh, MADEP
Laurie Nehring, PACE

United States Department of the Interior

FISH AND WILDLIFE SERVICE

Great Meadows National Wildlife Refuge
Weir Hill Road
Sudbury, Massachusetts 01776
Phone:(978)443-4661 Fax:(978)443-2898

February 12, 1998

Mr. Jim Chambers
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Dear Mr. Chambers,

Thank you for the opportunity to comment on the Proposed Plan for SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41 U.S. Army, Reserve Forces Training Area Devens, Massachusetts. I especially want to express my appreciation for the site tour you provided to me and my Deputy, Janet Kennedy, on January 14.

I do not feel comfortable commenting on the proposed siting of the consolidated landfill. I know little of the subsurface drainage and the techniques described to contain such an area. I do request, however, that due consideration be given to the concerns of the citizens and elected officials who have voiced their opinions regarding the proposed site at Shepley's Hill.

As the land manager in charge of the resources of the Oxbow National Wildlife Refuge and as a citizen concerned with our nation's wetlands resources, I feel the need to disagree with the No Action Proposal for AOC 41 and SA 12 and the surface debris removal only for AOC 11. AOC 11 is immediately adjacent to the area scheduled for transfer to the U.S. Fish and Wildlife Service from the U.S. Army for inclusion in the Oxbow National Wildlife Refuge, a unit of the National Wildlife Refuge System. It is situated in a wetland area and was created in violation of the Clean Water Act. In addition, the area is subjected to periodic flooding from the Nashua River. Such flooding may accelerate transport of materials from the landfill directly into the river which would directly impact a unit of the National Wildlife Refuge System.

The statement "harm caused by removing or treating contamination in this ecologically-sensitive area would outweigh benefits provided" is not an accurate one. Although removal of the landfill would cause site disturbance, the overall benefit in the long-term would far outweigh the disturbance factor. The site is a wetland which has been filled in violation of the law. The techniques for wetland restoration exist and have been implemented across the United States by

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numerous state and federal agencies, including the U.S. Army Corps of Engineers who are tasked with enforcing the Clean Water Act.

Similarly AOC 41 and SA 12, both located on South Post, should be removed in their entirety. SA 12 is located in a flood prone area of the South Post along a tributary of the Nashua River which flows through the Oxbow National Wildlife Refuge. Maximum levels of organic and inorganic contaminants exceed ecological benchmark values. The cleanup of this site will again aid in the battle to clean-up the Nashua River and remove the potential for an acceleration of leachate should the river flood this site. If an event of this nature were to occur, this site would potentially cause pollutants to enter into a National Wildlife Refuge. AOC 41 is located on the north shore of a wetland, and according to your reports, the site contains chemicals in media at concentrations that exceed residential screening values. Although this site is not scheduled for residential purposes, the harm to the natural resources of the area and the potential for harm to individuals who may come in contact with the pollutants, should warrant removal of this site.

Section 2853 of the 1996 Defense Authorization Bill (DAB) provides for the transfer of South Post to the Department of the Interior as part of the Oxbow National Wildlife Refuge when the lands become surplus to the needs of the military. The role of a national wildlife refuge is to provide areas of safe, protected habitats for species of fish, wildlife and plants, with special emphasis given to Trust Species (endangered species, migratory birds and interjurisdictional fish). It would be prudent for the Army to demonstrate a positive land ethic by undertaking the removal of the entire landfill site to ensure the environmental health of this site. As stated above, the technology exists to remove the landfills and restore these areas to their original state.

I again want to thank you for the opportunity to comment on the Proposed Plan. I look forward to attending the next public meeting and learning of any new developments with the Plan. If you have any questions, please feel free to contact me.

Sincerely,

Bud Oliveira

Bud Oliveira
Project Leader

cc: Senator Edward M. Kennedy
Senator John F. Kerry
Representative Marty Meehan
Nashua River Watershed Association
USFWS - Concord, NH
USFWS - Division of Refuges, R5
Heidi Roddis, Massachusetts Audubon Society
Don MacIver, Massachusetts Association of Conservation Commissions

Congress of the United States
Washington, DC 20515

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MAR 16 1998

March 9, 1998

Mr. James Chambers
U.S. Army, Reserve Forces Training Area
BRAC
30 Quebec Street, Box 100
Devens, Massachusetts 01432-4429

Dear Mr. Chambers:

Since the Army announced the closing of Fort Devens in Massachusetts we have made the clean-up and reuse of the base a priority. The environmental protection of our limited resources is critical to both the public health of the communities surrounding Devens and the redevelopment of the former base. The satisfactory remediation of the landfills is one of the most critical aspects of this process.

As you know, in July 1997, we were joined by the Massachusetts Congressional Delegation in urging then-Secretary of the Army, Togo West, to excavate and consolidate the seven landfills. The Army, the U.S. EPA and the Massachusetts DEP have worked hard to move toward this vision. The draft proposal that is now being reviewed, while bringing us closer to an acceptable solution, is being met with tremendous public dissatisfaction. Any new landfill, regardless of location, should be constructed with state of the art engineering. A double lined landfill and ground water monitoring systems are minimum requirements to prevent leaching of contaminants into the area water supply.

Since the draft proposal was announced, we have heard from many of our constituents about their concerns with the proposal. The majority of comments have focused on two problems within the proposal.

First, elected officials and residents of Ayer are deeply troubled with the planned consolidation location at Shepley's Hill. The draft plan does not allay fears of future ground water contamination. Residents prefer off-site disposal and are working with the Massachusetts Development Finance Agency (MDFA) to demonstrate that this option is not only preferable but economically feasible as well. The proposal submitted by Ayer and the MDFA warrants full investigation by the Army and the regulators. Appropriate disposal off site is a remedy which will allay concerns, protect the environment, and benefit the Devens Reuse Plan.

We would also like the Army to consider the feasibility of using the North East Solid Waste Committee (NESWC) waste-to-energy plant in North Andover, Massachusetts, for off-site disposal of some or all of the landfill materials.

The second area that has generated comments is the decision not to include AOC 11 in the consolidation plan. The proposal to remove only the surface level debris does not go far enough; we recommend that this landfill be fully excavated. Given the years of effort spent cleaning the Nashua River and that the landfill is located in a floodplain, the Army should prioritize the remediation of this site and AOC 11 should be included in any further analysis of disposal methods.

The US Fish and Wildlife Service has also written to us about the two landfills located on the South Post, AOC 41 and SA 12. We encourage you to give the Service's comments every consideration.

Finally, we want to thank you for agreeing to extend the public comment period and for holding an additional public hearing. Allowing for full public participation in this process should be all of our priority.

Sincerely,

Marty Meehan
Member of Congress

John F. Kerry
U.S. Senate

cc: John DeVillars

Disposal
Safety
Incorporated

MEMORANDUM
DATE: March 3, 1998
TO: Laurie Nehring
FROM: Bill Eckel
SUBJECT: Five Year Review of Shepley's Hill Landfill Remedy and Implications for Consolidation Landfill Plan

This memorandum presents Disposal Safety's analysis of the Army report entitled *Draft Five Year Review, Shepley's Hill Landfill Long Term Monitoring, Devens, Massachusetts (February, 1998)*. I will refer to the Army's report as the "Five Year Review."

This report will discuss the current status of Shepley's Hill Landfill, the effectiveness of the current remedy, and the implications of both of these for the proposed Consolidation Landfill.

Major DSI Conclusions

1) The remedy selected in 1996 for Shepley's Hill Landfill, "Limited Action," is not effective in reducing arsenic concentrations, and the resulting cancer risk, in the ground water.
2) The ground water contamination problem at SHL is much worse than it was believed to be in 1993 or 1996, because higher arsenic concentrations have been discovered.
3) The Army needs to select a new remedy for arsenic contamination of ground water at SHL; this may include pump-and-treat or engineered barriers to divert ground water flow around SHL.
4) No additional construction (i.e., the Consolidation Landfill) should be planned for the area near Shepley's Hill Landfill until the new ground water remedy has been constructed.

Background

Under Superfund, the remedy for a site (as documented in the Record of Decision, or ROD) must be reviewed every five years to determine if it is still effectively protecting human health and the environment. Although the ROD for Shepley's Hill Landfill was signed in 1996, the capping of the site was completed in 1993. The Army, EPA, and MaDEP have agreed that January, 1998 will be the date of the first five-year review, since it is five years after the capping was completed.

1660 L Street NW, Suite 510
Washington, DC 20036
(202) 293-3993

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In the draft Five Year Review, the Army concludes that the actions completed in 1993 (site capping and ground water monitoring) are making satisfactory progress toward eventual site clean-up. The ROD defined satisfactory progress for the first five-year review as a 50% reduction in the calculated cancer risk from drinking ground water, as measured at the eleven monitoring wells surrounding the landfill. Since the cancer risk was due almost entirely to arsenic, the Army's major criterion was a 50% reduction in the concentration of arsenic in the wells.

The remedy chosen in the 1996 ROD (landfill capping and ground water monitoring) was known as Alternative SHL-2, or Limited Action. (The landfill capping was actually done in four phases over several years ending in 1993). In the event that the first five-year review did not show a 50% reduction in the cancer risk due to arsenic, the 1996 ROD called for a change in the remedy to Alternative SHL-9. This alternative calls for the extraction and treatment of contaminated ground water flowing away from Shepley's Hill Landfill. This is also known as a "pump-and-treat" remedy.

The 1996 ROD also called for additional monitoring wells to be drilled at the north end of the landfill to fill a "data gap." EPA felt that it needed to know more about ground water flow to the north, toward Nonacoicus Brook, especially at depth near the bedrock. Wells SHM-96-5B, SHM-96-5C, and SHM-96-22B were installed in 1996 to fill this data gap. Sampling and analysis results in 1996 and 1997 show that well SHM-96-5B is by far the most arsenic-contaminated well at the landfill.

Conclusions of the Draft Five Year Review

The Army concludes (p. 18) that:

1) eight of the eleven monitoring wells achieved a 50% reduction in cancer risk,

2) clean-up levels for all Contaminants of Concern (COCs), not just arsenic, were achieved in six of the eleven wells, and

3) potential exposure to arsenic will be reduced when the contaminated ground water comes into contact with more dissolved oxygen. According to the Army, the oxygen will cause the arsenic to change its chemical form and become less mobile in the ground water.

Disposal Safety's Analysis of the Five Year Review

After considering the Five Year Review, we conclude that the Army's major conclusions are incorrect or unjustified by the data presented. Details are presented below. We recommend that PACE ask EPA to declare that Alternative SHL-2 has been found ineffective. We further recommend that a pump-and-treat remedy (as described in Alternative SHL-9) should be installed to stop the

spread of arsenic contamination to Plow Shop Pond and to the Nashua River via Nonacoicus Brook or the underlying aquifer.

We also understand that other remedial actions may needed to prevent the flow of ground water underneath the cap on Shepley's Hill Landfill, and thereby prevent the generation of contaminated ground water in the first place. This may include construction of an "engineered barrier" to prevent ground water from flowing beneath SHL.

Review of Army's Conclusion 1

The Army's calculations of the current risk at the eleven monitoring wells are based on two sampling events in May and October, 1997. Except for well SHM-93-22C, arsenic concentrations were higher in October than in May. To calculate the current risk, the Army used the average of the May and October results. The reason given (p. 17) for averaging the two sets of results was to account for seasonal fluctuations in ground-water arsenic concentrations. The Army admits (p. 17) that "these fluctuations are not well documented due to the limited number and timing of sampling rounds conducted during the first five year monitoring period."

In its *Long Term Monitoring and Maintenance Plan, Shepley's Hill Landfill, Fort Devens, Massachusetts, May, 1996 (LTMMP)*, the Army decided that the baseline concentration of arsenic in each well would be represented by the **maximum** concentration among the two or three sampling rounds available at that time (p. 4-3). The Army also stated that "the regulations suggest use of statistical methods to evaluate ground water data; however, the limited quantity of available data prevent meaningful application of statistics" (p. 4-3). The Army also states on the same page that **"central tendency exposure is not being evaluated at Shepley's Hill Landfill, therefore use of maximum concentrations is appropriate"** (emphasis added) Seasonal fluctuations are mentioned only in passing.

The Army should be consistent with its treatment of the data in the LTMMP, and use maximum detected concentrations both in the calculation of baseline risk and current risk. (In other words, "comparing apples to apples"). This means that, with the exception of one well, the arsenic concentrations from the October, 1997, sampling round should be used to calculate the current cancer risk, since the October results were higher.

It should also be noted that the May arsenic laboratory results were probably biased low (towards underestimating concentrations) due to low spike recovery (Five Year Review, p. 14), so that they cannot be used with the same confidence as the October results. The Army used the May results with no attempt to correct for the low bias.

Using the Army's own risk formula, we have recalculated the percent reduction in cancer risk at the eleven wells using the 1997 maximum arsenic concentrations. Table 5-3 in the Five Year Review would look as follows if the maximum concentrations are used.

Comparison of Risk Reduction Using Maximum Versus Average Arsenic Concentration

Well No.	Baseline Risk	Maximum 1997 Arsenic Concentration, ppb	Current Risk (max. 1997 arsenic)	Percent Change in Risk (max. 1997 arsenic)	Percent Change in Risk (Army, avg. 1997 arsenic)
SHL-3	2 E-3	10 U	--	--	-99 (Chromium)
SHL-4	5 E-3	180	3.2 E-3	-36%	-50%
SHL-5	7 E-4	10 U	--	--	--
SHL-9	1 E-3	25.2	4.4 E-4	-56%	-64%
SHL-10	3 E-3	209	3.7 E-3	+23%	-38%
SHL-11	6 E-3	366	6.4 E-3	+7%	-10%
SHL-19	1 E-2	298	5.2 E-3	-48%	-78%
SHL-20	8 E-3	227	4 E-3	-50%	-75%
SHL-22	6 E-4	34.8	6.1 E-4	+2%	-39%
SHM-93-10C	4 E-4	10.5	1.8 E-4	-54%	-64%
SHM-93-22C	1 E-3	40.4	7.1 E-4	-29%	-67%
SHM-96-5B	Not Established	3,300	5.8 E-2	--	--
SHM-96-5C	Not Established	43.2	7.6 E-4	--	--
SHM-96-22B	Not Established	352	6.2 E-3	--	--

Current cancer risks, using 1997 maximum arsenic concentrations, range up to 5.8 E-2 (5.8 %) for lifetime exposure. Cancer risks in the wells bordering Plow Shop Pond (SHL-4, -10, -11, -19, and -20) are in the range of 3.2 E-3 to 5.2 E-3 (0.32% to 0.52%).

The revised Table 5-3 shows, generally, that the cancer risk reductions are not as large as the Army says they are, or that in some wells, risks have increased. Two of the wells (SHL-10 and SHL-11) near the original area of concern, Plow Shop Pond, show risk increases of +7% to +23%. Generally also, risk reductions of 50% have nor been achieved, or are marginal (i.e., -48% to -56%).

We believe it is clear that the target of 50% risk reduction in the eleven original monitoring wells has not been met. Furthermore, the largest risk is at well SHM-96-5B, north of the landfill. Neither the Army nor EPA understood, when the ROD was signed in 1996, that the arsenic problem at Shepley's Hill Landfill was this bad. The Army does not propose to review risk reduction in this well until the next five year review (2003).

Review of Army's Conclusion 2

The fact that other Contaminants of Concern have been reduced in concentration is actually not an important conclusion. Except for chromium in well SHL-3 and vinyl chloride in SHL-9, the risks in all other wells are dominated by arsenic.

Review of Army's Conclusion 3

The Army asserts (p. 13) that because the arsenic in wells SHM-96-5B and SHM-96-22B at the north end of the landfill is dissolved in the water, rather than being adsorbed to particles, that the arsenic must be in the +3 oxidation state. We must reject this assertion, because the Army did not analyze the samples for different arsenic species, be they +3, +5 or others. Clearly, the arsenic is dissolved and therefore mobile; but arsenic +5 species are also soluble. But we do not know the arsenic's oxidation state, and so we cannot agree with the Army's conclusion that the arsenic will oxidize to the +5 state and precipitate out of the water when the plume encounters aerobic ground water. Until the Army actually does laboratory analyses to test for arsenic +3 and +5 species, and shows that the arsenic will precipitate, any conclusions on this subject are speculative and unsupported.

Discussion

Disposal Safety believes that the target risk reduction of -50% for the first five year review has not been achieved. Alternative SHL-2, Limited Action, is therefore not working. Other actions must be taken to remove arsenic from the ground water around Shepley's Hill Landfill.

There are other reasons why an active clean-up of Shepley's Hill Landfill is needed. The ground water flow beneath the landfill was not as well understood in 1993 or 1996 as it is today. We know now that the main flow path of ground water is to the north, toward the Nonacoicus Brook wetland, rather than to the east and Plow Shop Pond. Much higher levels of arsenic (2000 to 3000 parts per billion) have been found in the 1996 wells at the north end of the landfill than the levels that were of concern in the Plow Shop Pond wells in 1993 (200 to 300 ppb). We know now that the arsenic is dissolved in the water, and is therefore quite mobile in the subsurface. But perhaps most importantly, we

understand that ground water is flowing into the landfill from the south, underneath the cap that is supposed to keep the landfill dry. Thus, ground water highly contaminated with arsenic is being generated despite the landfill cap that is supposed to prevent just that.

In short, the arsenic problem in ground water at Shepley's Hill Landfill is much worse than it was believed to be in 1993 or even 1996. We know enough now to understand why just capping the landfill is not effective. We recommend that Pace request that EPA and MaDEP declare that Alternative SHL-2, Limited Action, is not working and that active remediation of the landfill is needed.

Implications for Consolidation Landfill

We have already reported to PACE that the location of the proposed Consolidation Landfill is directly on the spot where an extraction well would need to be located to capture ground water flowing to Plow Shop Pond from the south. (This is based on the Army's *Shepley's Hill Landfill Extraction/Discharge System 60% Design, November, 1997*). In that report, the Army concluded (p. 14) that an extraction well could not be placed to the south of Plow Shop Pond because that was where the Consolidation Landfill was to go (Figure 1).

As we understand it, this means that if the Consolidation Landfill were to leak, it would be too close to Plow Shop Pond to prevent the leakage from reaching the pond.

Furthermore, remedial work on Shepley's Hill Landfill may also interfere with the siting of the Consolidation Landfill. One way to prevent ground water from flowing underneath SHL is to build an "engineered barrier" to divert ground water away from SHL. This could be a wall of bentonite slurry or interlocking sheet piling from the bedrock to the ground surface, across the length of the southern end of SHL (Figure 2).

The Army's 60% Design also calls for an extraction well at the north end of SHL, a pipeline buried underneath the cap, and possibly a pre-treatment plant for reducing arsenic concentrations before the water is discharged to the sanitary sewer.

Clearly, before any new landfill is put in this area, the Army should have a clear idea of what construction is needed to deal with the clean-up of Shepley's Hill Landfill.

Notice

This report has been prepared solely for the guidance of People of Ayer Concerned about the Environment (PACE) in interpreting information available to them. Other users should satisfy themselves independently as to facts and conclusions contained herein. In particular, such users should refer to

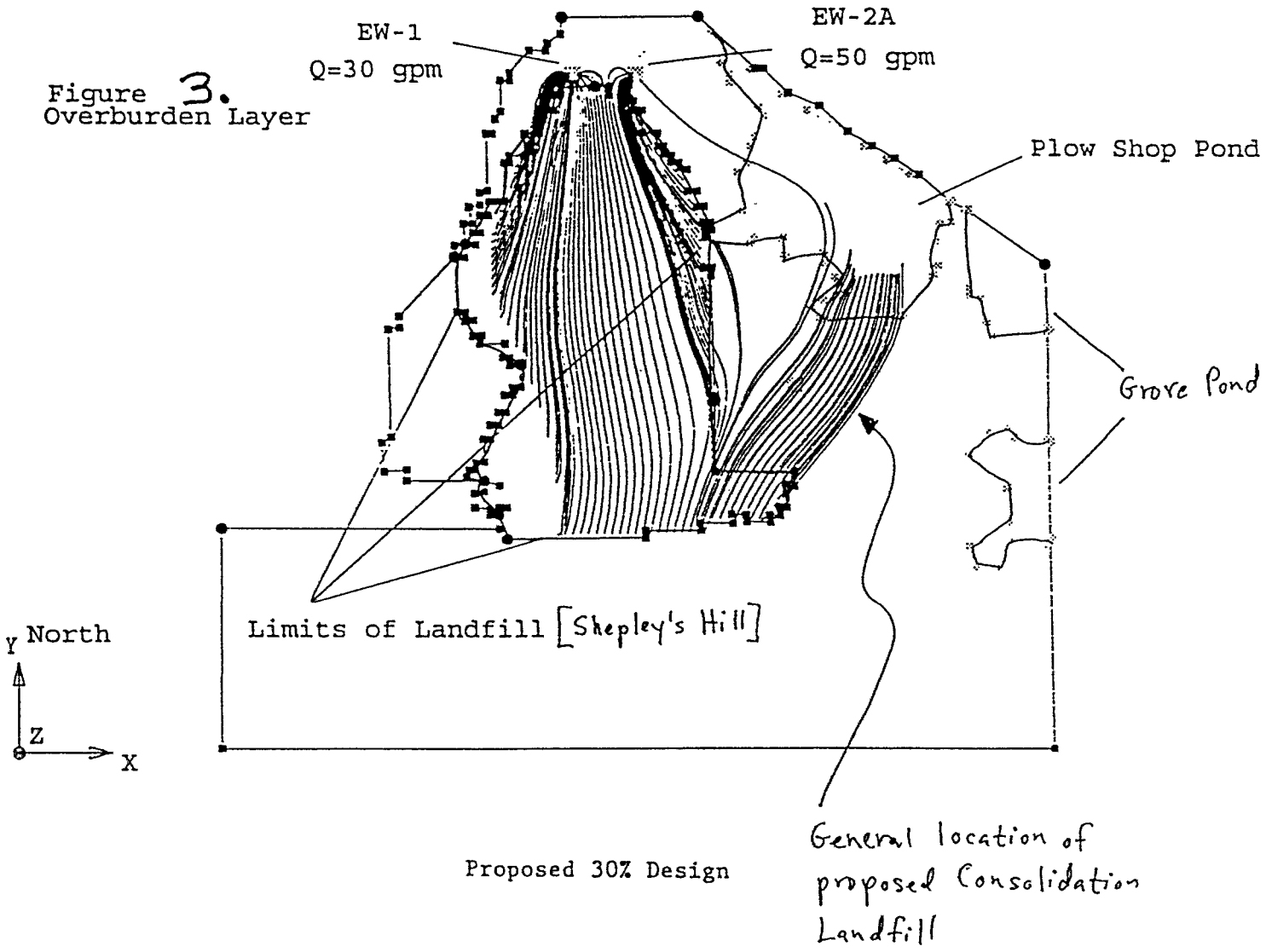
original sources of information rather than to this report. This report is not intended for use in any real estate or other transaction, nor as a public health recommendation, and should not be relied upon for such purposes.

Attachment A

The Army’s proposed 30% Design for ground water extraction at Shepley’s Hill Landfill would allow ground water to flow underneath the proposed Consolidation Landfill site into Plow Shop Pond. If the Consolidation Landfill leaks, Plow Shop Pond would become contaminated.

ATTACHMENT A

Figure 3.
Overburden Layer



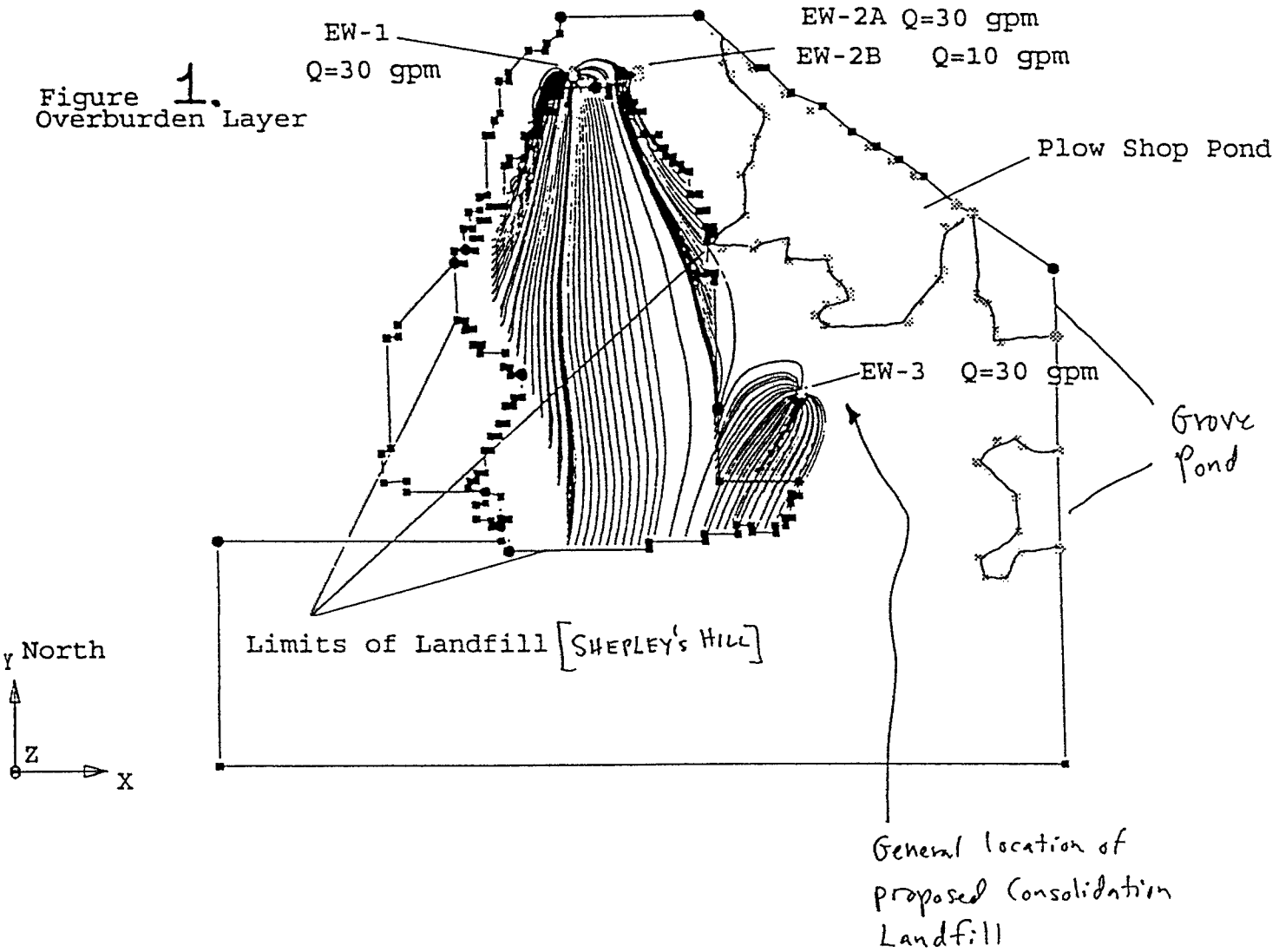
Proposed 30% Design

Attachment B

The Consolidation Landfill would cover the location of possible extraction well EW-3. It would then not be possible to capture any contaminated ground water leaking from a future Consolidation Landfill.

ATTACHMENT B

Figure 1.
Overburden Layer



Attachment C

General map of Shepley’s Hill Landfill and Plow Shop Pond.
Potential locations of extraction well, pipeline, engineered barrier, and treatment facility to clean up arsenic contaminated ground water.

ATTACHMENT C

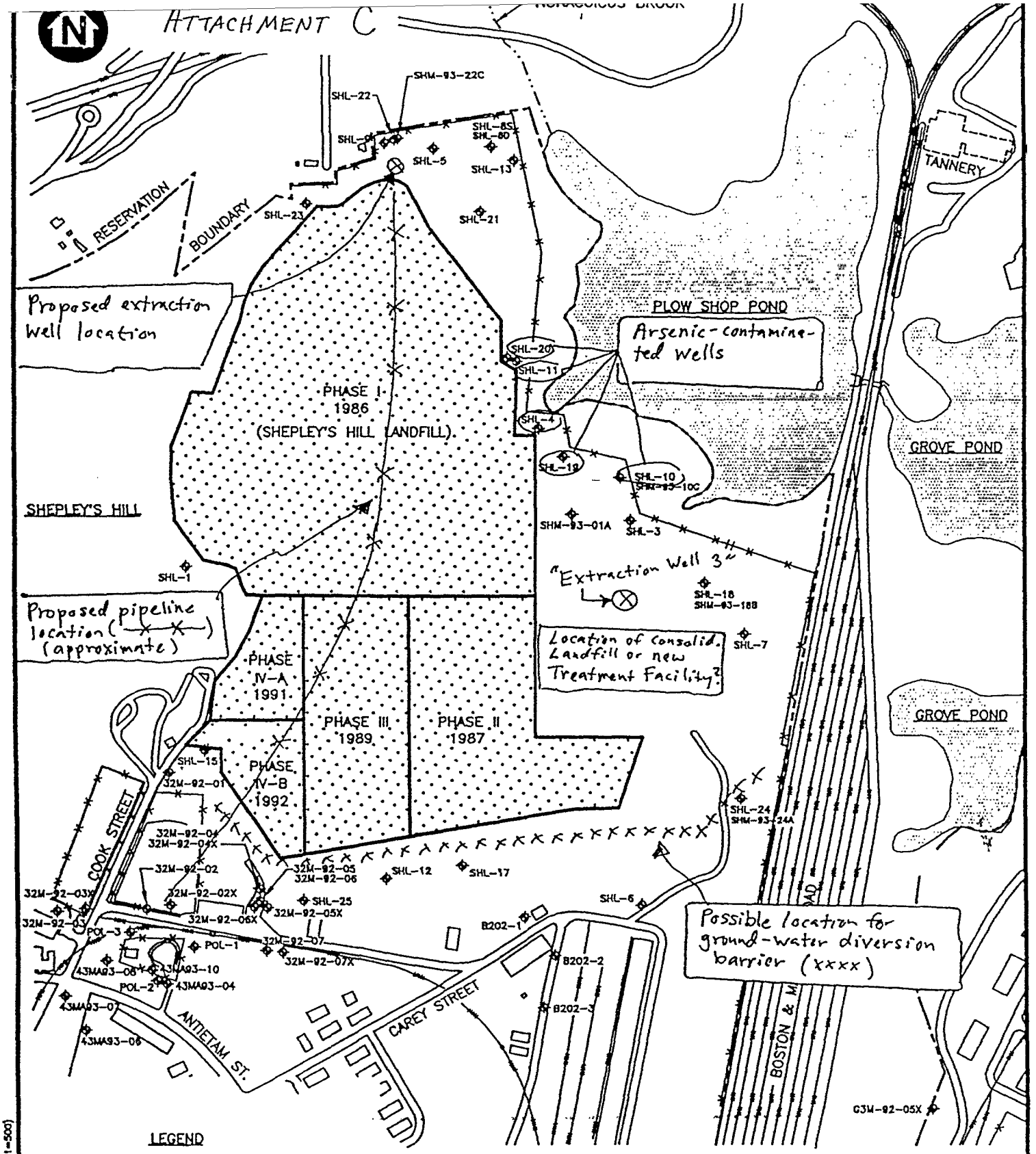


FIGURE 1-2
PLOW SHOP POND SITE MAP
PLOW SHOP POND AND
GROVE POND SEDIMENT EVALUATION
FORT DEVENS, MA
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Disposal
Safety
Incorporated

To: Laurie Nehring, PACE
From: Steven Amter
William Eckel

Date: February 12, 1998

Subject: Evaluation of the Ground-Water Model for Fort Devens

This memo summarizes our review of the ground-water model developed by the U.S. Army Corps of Engineer's consultant, Engineering Technologies, Inc. (ETI). Details of this model are described in *Detailed Flow Model for Main and North Post, Fort Devens, Massachusetts*, Final Report, ETI, May 19, 1995. Additional refinement of the model is described in *Groundwater Model Update Report, Predesign Investigations, Areas of Contamination 4, 5, and 18, Shepley's Hill Landfill*, March 1996, Stone & Webster Environmental Technology & Services (S&W).

The purpose of our review was to:

- Briefly summarize the modeling work.
- Evaluate its overall quality, strengths, and weaknesses.
- Evaluate its reliability for remedial design.
- Determine whether pumping the Town of Ayer's Grove Pond water supply wells will cause them to pull in contamination from the existing landfill or the proposed Consolidation Landfill.
- Discuss the related question of whether the Army Corps of Engineers' prediction that Plow Shop Pond will be protected by extraction wells north of the Shepley's Hill Landfill is true.

Model summary

To simulate ground-water flow beneath Fort Devens, Engineering Technologies used the United States Geological Survey MODFLOW and TRACKER computer programs. These widely used and flexible programs can simulate three dimensional (i.e., horizontal as well as vertical) ground-water flow.

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The model simulates ground-water flow over an area of approximately 22 square miles, which is large enough to extend past Fort Devens on all sides. In the model, this area is represented by 14,300 "cells" (square mathematical elements) that measure 200 feet on each side.

The complex hydrogeology beneath Fort Devens was approximated in the model by three layers: a moderately permeable upper layer of glacial drift deposits; a highly permeable gravel layer (which is not present in all portions of the site nor in the model); and a relatively low permeability fractured bedrock. Individual fractures are not represented in the model; instead the bedrock is treated as equivalent to a porous medium that has the same hydraulic conductivity.[1]

One of the strengths of the MODFLOW model is that it is good at handling surface water, and its relationship to ground water, and pumping and extraction wells. Thus, the various water supply wells, rivers, ponds, and creeks are explicitly included in the simulation.

Important input values into the model include:

- Hydraulic conductivity for the bedrock, gravel, and drift layers.
- Streamflow, including losses to, and gains from ground water.
- Rainfall and ground-water recharge. The recharge is the relatively small portion of rainfall that actually gets down to the water table.
- Water-supply well pumping rates and recharge basin infiltration rates.

Evaluation of overall quality

The Fort Devens site has complex hydrogeology. Overall, Engineering Technologies, Inc. has done a relatively good job of crafting a computer model that incorporates this complexity. A lot of effort was put into capturing important physical characteristics that are often ignored or glossed over in many other models we have seen. That having been said, a good effort does not necessarily translate into a robust model. Modeling is an imperfect science, and even good computer models can only approximate the characteristics of real sites. Thus, an important issue involves the limits of the model's predictive ability.

Model strengths — The model is based on a better than average amount of site-specific information. For example, use was made of multiple slug tests and pumping-well tests to choose representative values of hydraulic conductivity for the various geologic layers in the model.

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[1] Hydraulic conductivity (K) is a measure of permeability — of how readily water moves through the rock or sediment. This is similar to transmissivity (T), which is a measure of how readily water moves through the entire thickness of the aquifer. Mathematically, the transmissivity equals the conductivity multiplied by the thickness (b) of the aquifer (T = Kb).

ABB derived the map from a 1977 study by Brackley and Hansen. The proposed Consolidated Landfill site sits on a zone where the transmissivity is greater than 4000 ft^2 per day. This zone apparently connects to both Plow Shop Pond and Grove Pond. It is inadvisable to place yet another landfill in an area where contaminated ground water could flow toward drinking water sources.

4) *There is a significant possibility that active remediation (i. e., a pump-and-treat system for contaminated ground water) will be required for Shepley's Hill Landfill. The proposed Consolidated Landfill will interfere with construction necessary to build a ground water treatment system.*

The majority of risk from ground water exiting SHL is due to arsenic. The Army has set the eventual clean-up goal for arsenic at 50 micrograms per liter (Fg/l, parts per billion), which is the current Maximum Contaminant Limit (MCL) for drinking water. The MCL for arsenic was originally set by the Public Health Service in 1942, based on acute toxicity concerns. The MCL for arsenic has not been revised since it was learned that arsenic causes cancer when consumed in drinking water. EPA must decide by the year 2000 if the MCL for arsenic must be revised; there is a significant possibility that the MCL will be lowered. The new MCL may be as low as 10 Fg/l (the European and Japanese standard) or even 2 Fg/l. Arsenic in drinking water above 2 Fg/l represents a lifetime cancer risk greater than 1-in-10,000, which is above the Superfund "point of departure" risk range.

If the MCL is lowered, then the chosen remedy for SHL will need to be revised at the next 5-year review. In the absence of active remediation, it will undoubtedly take far longer for arsenic levels to naturally decline to 10 Fg/l or 2 Fg/l than to 50 Fg/l. The Army anticipates that arsenic levels will drop to 50% of baseline by the first 5-year review (January, 1998), a further 25 % by 2003, and to "clean" levels by 2008. If the reduction in arsenic does not meet expectations, active remediation such as ground water pumping-and-treating may become necessary. Extraction wells, pipelines, and treatment facilities will be needed. The proposed Consolidated Landfill will interfere with the siting of such facilities. With the new landfill in place, contaminated water may have to be piped to the North Post Waste Water Treatment Plant (WWTP) or the Town of Ayer WWTP, which has recently been cited as out-of-compliance with its discharge permit by MADEP. If neither of these options is feasible or desirable, then a new treatment works will need to be built within a reasonable distance of SHL. The proposed Consolidated Landfill would occupy the most obvious site for such a treatment works. The siting and permitting issues for a treatment works, if it cannot be located immediately adjacent to Shepley's Hill Landfill, promise to be complex.

5) *The storm water catch basin near monitoring well SHL-17 represents an additional source of ground water recharge that must be considered.*

The storm water catch basin just north of Carey Street and east of monitoring well SHL-17 is in the same area as an historical "kettle hole" wetland, shown on 1939 USGS Ayer quadrangle maps. Two other kettle holes were covered by Shepley's Hill Landfill. Water recharging to the ground from the storm water catch basin probably flows north beneath SHL, where it could transport contaminants away. This may defeat the purpose of capping the landfill, by providing a source of infiltrating ground water (historically, the three kettle holes were at the same elevation as the ground water system, and Plow Shop and Grove Ponds). Waste at the level of the two filled kettle holes may still be in contact with ground water flowing south to north. The effect of the storm water catch basin is not considered in any ground water modeling report we have seen.

6) *Maintenance of the SHL cap is not performed often enough to prevent repeated deterioration of the cap, exposure of the geotextile cap material, loss of cap soil, and silting-in of swales.*

The Army's maintenance schedule for SHL and for the proposed maintenance schedule for the Consolidated Landfill are inadequate to detect and correct problems that may result in renewed contamination of ground water. Members of PACE and its consultants toured the landfill on November 29, 1997, and observed numerous areas of erosion and silting. Identical concerns were documented in the Army's 1996 annual report for SHL; apparently they have re-occurred and have not been fixed.

7) *The proposed Consolidated Landfill site is not secure. Trespassing onto the SHL and adjacent proposed consolidation site is facile, and could easily result in serious acts of vandalism.*

The proposed consolidation site and all of SHL should immediately be enclosed with a fence, and locks placed on all gates. Integrity of the landfill cap cannot be reasonably guaranteed otherwise.

<u>Conclusion</u>

For the reasons stated above, construction of a Consolidated Landfill in the area proposed by the Army is not appropriate. The Army, EPA and MADEP must evaluate and compare the cost of options for off-post disposal of wastes from SA 13, and AOCs 9, 11 and 40. Further study of the contribution of AOC 11 to ecological risks in nearby wetlands should be carried out to determine if complete remediation of AOC 11 would reduce such

risks significantly. If so, wastes AOC 11 should be removed entirely and disposed of off-post.

The “No Action” alternative is appropriate for SA 6, SA 12, and AOC 41, since risks from these sites are acceptable. Also, because the Army is retaining South Post as a Reserve Forces Training Area, clean-up of these sites is not required to facilitate re-development of the land. If and when re-development is contemplated, the new land owners or occupiers should be responsible for the clean-up.

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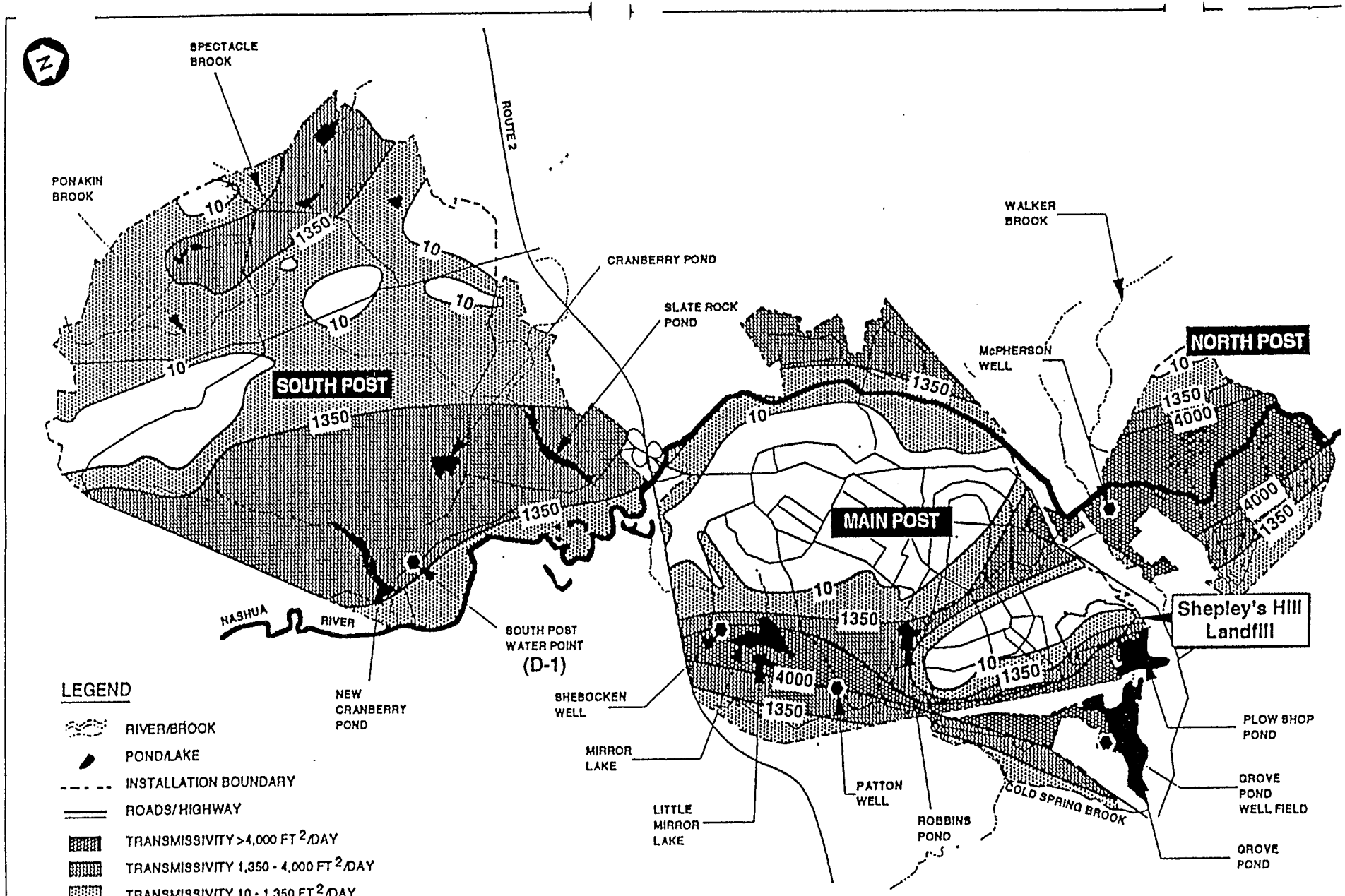
Attachment 1

Map of Transmissivity Zones



REGIONAL AQUIFER TRANSMISSIVITIES
CONSOLIDATION LANDFILL
FEASIBILITY STUDY
FORT DEVENS, MA

ABB Environmental Services, Inc.

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Also, data for both stream flow and rainfall were collected over a period of months from on-site gauging stations.

The model appears reasonably well calibrated. Calibration is the process of adjusting model input values (some of which were fisted above) to determine which mix of values yields the best match between the computer simulation and field-measured water levels. There was an ample number of measured points — water levels from more than 150 wells and several stream gauging stations — to compare simulated water levels against measured elevations. Most of the calibration involved adjusting the hydraulic conductivity of the glacial drift and gravel layers in areas where initial simulations were most inaccurate. Both steady-state and transient calibrations were performed,[2] as is required for this type of work. Additional calibration of the model was performed by Stone & Webster in 1996 to incorporate additional piezometer (a well constructed to measure water-levels) data collected from around Shepley's Hill Landfill.

Model weaknesses — This is a complex site, and despite the diligent data-collection efforts, only a small fraction of the site's relevant variability was captured in the model. The sensitivity analysis[3] showed that model results were most sensitive to hydraulic conductivity and recharge. (This is usually the case for ground-water models.) Of course, one of the site's most dominant characteristics is that the distribution of hydraulic conductivity is highly irregular.

The model is based on a uniform 200-foot grid. Although this is fine enough for site-wide simulations, it may be too coarse for detailed work. For detailed work, for example near the Shepley's Hill Landfill and the Grove Pond well points, the mesh needs to be more refined. This could be handled by simply adding more grid points in certain areas, or alternatively, using a version of MODFLOW that generates telescoping grids.

Another potential weakness in the work is that there has not been a model verification step. This is a step beyond calibration that involves using the calibrated model to make a prediction of a new situation, then collecting field measurements to ascertain whether the prediction was, in fact, accurate. The reason calibration alone may be inadequate is that there may be more than one set of parameter input values that yield a pretty good match to specific observed conditions. The key is that the model should be able to accurately simulate groundwater flow scenarios without additional calibration. Examples of verification approaches include comparing the model against large-scale pump tests, an unusually large storm event, or long-term seasonal changes. An unverified model needs to be used with a certain amount of caution.

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[2] In a steady-simulation, input values do not vary over time, thus one obtains a result that also does not vary with time. A transient simulation varies with time. For example, a steady-state simulation of a pumping well would predict how much the water table would be lowered by some specified pumping rate. It tells only the final value, not how fast the water table elevation would change. In contrast, a transient model would show how the water table declined over time after the pump was turned on, and could also show the effect of variable pumping rates.

[3] A sensitivity analysis involves systematically varying values of each input parameter to see how sensitive the model results are to the input. This is important there because there is often a great deal of uncertainty concerning both the "correct" value, or range of values.

The capture zone of the Town of Ayer's Grove Pond water-supply wells

Modeling performed in the Engineering Technologies' original study delineated the "Zone II" well head protection zones around the various drinking-water supply wells in the area. A Zone II is defined in State regulations as the volume of aquifer from which a drinking-water well draws its water. Identifying the geometry and location of this volume facilitates protecting the well from contamination.

The regulations prescribe certain conditions that must be assumed when modeling a Zone II. According to ETI, in the simulation it must be assumed that (1) the well(s) will be pumped at its permitted rate for 180 days, and (2) no water enters the aquifer (i.e., there is no recharge) during the pumping. In essence, extreme drought conditions are simulated.

To simulate the Zone II scenario, ETI began with conditions predicted by the steady-state model for historic average pumping rates. It then increased the pumping rate to permitted capacities, imposed the no-recharge conditions, and ran the model (now in transient mode) for 180 days. Under these conditions, ETI's predicted Zone IIs for the Army's Grove Pond well points and the Town of Ayer's wells are golf-club shaped. Zone II for the well points extends under Grove Pond — much of the water originates from the pond. The Zone II covers 83 acres and extends 2000 feet south and 3000 feet west. The long, thin "handle" extends to the west between the bedrock outcrops. Water is not predicted to originate from the areas of the Shepley's Hill landfill or the proposed Consolidation Landfill.

Based on comments from the USGS/USEPA and others (the report does not specify whom), ETI also performed simulations under certain alternative sets of assumptions. Two alternative simulations were performed for the Army's well points near Grove Pond. In the first alternative, ETI began with approximately steady-state conditions predicted by the model for maximum permitted pumping rates instead of historic pumping rates. It then maintained both Zone II conditions, and ran the model for 180 days. Beginning with maximum permitted pumping rates made the predicted capture zone for the Grove Pond well points substantially wider at its western end, so it resembled a hooked amoeba. For some unexplained reason, the Town of Ayer's wells were not simulated under this scenario.

The second alternative, in which both Zone II conditions were relaxed, was supposed to predict the capture zone under long-term, "average" conditions. Recharge to the ground water was allowed, all wells were pumped at their permitted rate, and the model was run in the steady-state mode. This resulted in a dramatic difference. The predicted capture zone for the Grove Pond well points were much smaller: they extend less than 500 feet and cover only five acres. More importantly, even a larger portion of the water originates directly from the pond and thus passes through contaminated sediments.

Evaluation — All simulated scenarios indicate that the Town of Ayer wells and the Army's Grove Pond wellpoints draw water that originates from the pond and from upgradient ground-water sources. The relative contribution of ground water depends heavily on the assumptions that underlie the different simulated scenarios. The model predicts that under both

drought conditions and long-term "average" conditions, water from the area of the existing Shepley's Hill Landfill and the proposed Consolidation Landfill is not predicted to be captured by the wells. However, the model predicts that a significant amount of ground water from beneath Shepley's Hill Landfill flows into Plow Shop Pond. This means that without some form of engineered containment, the landfill would be a continuing source of contaminated ground water, which could impact any plans to restore Plow Shop Pond to an uncontaminated condition. The simulations also show that water from beneath the site of the proposed Consolidation Landfill appears to flow into Grove Pond. This could affect the quality of water produced by any wells drawing from Grove Pond, as well as hinder plans to restore this pond.

Model predictions in the Shepley's Hill Landfill Extraction/Discharge System 30% design concept report

As part of its contingency plan, the Corps of Engineers is designing a ground-water containment system for arsenic-contaminated ground water emanating from the Shepley's Hill landfill. The Corps' contractor, Stone & Webster, has used the ETI's ground-water model to help design the containment system. This work is described in *Shepley's Hill Landfill, 30% Concept Design*, U.S. Army Corps of Engineers, July 1997. Based on the modeling, the report concludes that two extraction wells pumping at a combined rate of 80 gallons per minute could capture all the water flowing beneath the landfill and prevent any further discharges into Plow Shop Pond.

The need for field verification

As discussed above, the ETI's ground-water flow model is currently unverified and should not be relied upon to make important regulatory or remedial decisions. This is particulary true for issues that "push" the model's ability to simulate small portions of the modeled area — the model grid is probably too coarse to be sufficiently reliable. Before acceptance, predictions or conclusions that result from the use of this model must be tested against future field data.

For example, Stone & Webster's design for installing two extraction wells to contain and capture ground water from Shepley's Hill Landfill needs to be supported by a pilot test(s) *and* comparison to water levels in the monitoring well network. Note that the duration of the July, 1997 pump test was not long enough to serve this purpose. The object would be to fully delineate the capture zone with field data. If the monitoring well network is not sufficiently dense to accomplish this, then additional wells are necessary.

<u>Notice</u>

This document, has been prepared solely for the guidance of PACE in interpreting information available to them. Other users should satisfy themselves *independently* as to fact and conclusions contained herein. In particular, such users should refer to original sources of information rather than this memo. This document is not intended for use in any real estate or other transactions, nor as a public health recommendation, and should not be used or relied upon for such purposes.

Rec'd 1/5/98

Disposal Safety Incorporated

To: Laurie Nehring, PACE

From: Bill Eckel, DSI

Date: January 2, 1998

Subject: Comments on "Proposed Plan for SAs 6, 12, and 13 and AOCs 9, 11, 40, and 41, U.S. Army, Reserve Forces Training Area, Devens, Massachusetts," December, 1997.

We have reviewed the Proposed Plan, the Landfill Remediation Feasibility Study (January, 1997), and EPA and Massachusetts DEP comments on both documents. We offer the following comments.

The Army proposes to consolidate wastes from AOCs 9 and 40, SA 13, and surface debris from AOC 11 in a new solid waste landfill to be constructed in an area east of Shepley's Hill Landfill and south of Plow Shop Pond. The proposed landfill consolidation site is not suitable for the intended purpose for the following reasons.

1) *The proposed Consolidated Landfill site allegedly contains unremediated Solid Waste Management Units.*

Massachusetts DEP, in an October 16, 1995 comment letter on the Draft Consolidation Landfill Feasibility Study, stated:

> "MADEP continues to be concerned with the limited number of borings placed on the proposed consolidation site relative to its size, the lack of baseline analytical data relative to site subsurface media, and *possible impacts from historic lagoons that may have been previously located on the site...*" [emphasis added]

The Army's response to this comment does not explicitly acknowledge the existence of any such lagoons, nor does it provide any information on possible contamination:

> "For purposes of the conceptual design, the geotechnical evaluation of the consolidation landfill site presented in the Landfill Remediation FS Report (LRFS) Appendix F adequately portrays site soils as being capable of providing support for the loadings proposed for a consolidation landfill. The MADEP issues of baseline analytical data and possible impacts from historic lagoons can be addressed by the Army during the final design phase, when

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more details (e.g., exact location of landfill footprint and actual depth of construction-related excavation) are known. No further site investigation, including soil borings and chemical analyses, are necessary prior to distribution of the FS."

This exchange of comment and response strongly suggests that an undetermined number of "lagoons" may have existed in the past on the site proposed for the Consolidated Landfill. The Army, EPA, and MADEP cannot fail to properly investigate the alleged lagoons prior to construction of the Consolidated Landfill. To do so would be a violation of RCRA regulations and would be clearly illegal. A systematic program of soil borings and chemical analysis is required to locate the alleged lagoons. If contamination is found, it must be dealt with properly under RCRA and CERCLA regulations before anything else can be done in the proposed landfill site.

2) *The Army, EPA and MADEP have no plan for determining if excavated materials meet the definition of hazardous waste.*

The proposed Consolidated Landfill is to be a RCRA subtitle D landfill, i.e., a "solid waste" landfill rather than a "hazardous waste" landfill. The Army still has no definite plan for testing excavated materials to determine if they are "hazardous." Even "construction debris" may contain potentially hazardous materials such as lead paint. How will the Army make this determination? Will there be an on-site laboratory to make an immediate determination of hazardousness, or will an off-site laboratory be used? What is the turn-around time for the off-site laboratory, and will this interfere with the excavation schedule? If hazardous wastes are discovered, what is the Army's specific plan for disposing of them?

The Army needs to present a detailed Sampling and Analysis Plan to describe how testing of excavated materials for RCRA hazardousness (specifically, the toxicity characteristic as measured by the Toxicity Characteristic Leaching Procedure, TCLP) will be integrated with the actual excavation. The TCLP cannot be performed with field instruments. A commercial or government laboratory with specialized equipment is required, and the usual turn-around time for TCLP analysis is on the order of weeks. To avoid delays in its excavation schedules, the Army will need to make special arrangements with a laboratory for fast-turnaround TCLP analysis, or it will have to set up an on-site laboratory. Also, the Army must have a contingency plan for dealing with any hazardous wastes they discover.

3) *The proposed Consolidated Landfill sits in a high transmissivity zone in the underlying surface aquifer. Any leaks from the proposed landfill will quickly reach Plow Shop and Grove Ponds.*

A map, presented in appendix E of the LRFS report (ABB Environmental Services, Inc., January, 1997), depicts the high transmissivity zone (reproduced here as Attachment 1).

PACE

PEOPLE OF **AYER** CONCERNED
ABOUT THE ENVIRONMENT
35 Highland Avenue, Ayer MA 01432
(978) 772-9749

Mr. James Chambers
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

March 6, 1998

Dear Mr. Chambers,

I would like to formally submit the enclosed comments regarding the Consolidation Landfill Proposed Plan. These comments were produced in close collaboration with Bill Eckel and Steven Amter, both from Disposal Safety Incorporated. Eckel and Amter serve as Technical Advisor for PACE, hired through the US EPA Technical Assistance Grant. PACE wholly agrees with these comments prepared on our behalf.

These comments are submitted in three parts:

I. Subject: Comments on "Proposed Plan for SAs 6, 12, and 13.."
Date prepared: January 2, 1998.
Summarizes more succinctly comments PACE submitted at the first hearing on January 8, 1998.

II. Subject: Evaluation of the Ground-Water Model for Fort Devens.
Date prepared: February 12, 1998.
This was referred to in my comments, presented at the Feb. 25, 1998 hearing. (A copy was turned in that night.)

III. Subject: Five Year Review of Shepley's Hill Landfill Remedy AND Implications for Consolidation Landfill Plan.
Date prepared: March 3, 1998.
These comments are to be submitted <u>BOTH</u> as PACE comments to the Five Year Review of SHLF AND the proposed Consolidation Landfill Plan, as they are directly linked in the discussions and concerns we are addressing.

I would like to submit the following additional comments:

Portions of our questions were still not responded to fully. We are still concerned about the separation of hazardous waste from nonhazardous waste, during excavations of debris from these landfills. The schematic flow chart presented Feb. 25 was a good start. We are concerned about the logistics of the huge quantities of materials to be moved. Where will the different piles go, as you attempt to separate questionable materials? How will the laboratory analysis be done, when piles of soil

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must sit over periods of many hours (or days)? How well do the field instruments work? What chemicals might they miss? How will you attempt to validify your efforts and identify any chemicals that are missed? What is the QA/QC planned?

We do understand that many decisions will need to be made in the field, as things are uncovered. A plan needs to be firmly in place to deal with all anticipated *and* unanticipated discoveries in the landfills, as the debris is excavated. PACE requests that a report which describes this process in much more detail be presented for public comment and review, well before the excavations begin.

The Proposed Plan is not clear about long term monitoring, once these sites are fully excavated and remediated. We request that a monitoring plan be in place for several years which would verify that all the hazardous waste has been located and removed.

To reiterate what I stated at the Feb. 25 hearing, we do support offsite removal as the primary alternative to the proposed SHLF location. We also request that AOC 11 be fully excavated and remediated. We agree fully with the statements made by Steven Mierzykowski of the US Fish & Wildlife Service. We support the plan for long term monitoring, as stated in the proposal even if the site is fully remediated, because of the complexity of the site and the impact on the wetlands and the Nashua River.

Finally, for the record, I would like to state that the number of people which officially signed the Army's register on Feb. 25 Hearing, at the entrance door does not fully reflect the number of people who attended. A representative from ABB was assigned to tend the table where attendees were to register. He became involved in conversations at the doorway (as were many of us who have been following this issue); there were many displays and other distractions as we entered the auditorium. In speaking to local residents, many did not know what the list was for, or did not even see it! (I was one of those who did not see it, and did not sign!!). The *Lowell Sun* estimated the crowd at more like 250, which I suspect is pretty close. Additionally, PACE has received many comments from citizens who were unable to attend the hearing, but who saw it on cable, making the actual number of concerned citizens much closer to the town's goal of 1000. Please add my name to the register, and have the record note that many additional persons attended, but did not register.

We urge the Army to move forward in responding to the concerns addressed by citizens and government officials, and to move quickly in investigating alternative locations, particularly offsite removal. Protection of human health and the environment is clearly the goal for everyone; the sooner these landfills are remediated, the better.

I would like to again thank Mr. Chambers and the BRAC office for the extensive work they have done to date in remediating the multiple sites on Devens. I look forward to working with them, the RAB and the BCT in the future.

Sincerely,

Laurie S. Nehring

Laurie S. Nehring,
PACE President

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Furthermore, the adjacent Shepley's Hill landfill, continues to pose significant threats to the area, which need to be addressed by the Army. This Army landfill is already the 2nd largest landfill in the state of Massachusetts. Shepley's Hill landfill continues to add high concentrations of pollution, particularly arsenic, to the waterways in and around Ayer.

We respectfully request that the Army seek an alternative location for consolidation of six Fort Devens landfills, which is both geologically secure *and* isolated from residential areas.

Name	Address	Telephone
1. Penny Kelley	20 Oakridge Dr.	
2. Robert W. Lewis	29 High St.	
3. Viola E. Lewis	29 High St.	
4. Marie J. Francis	25 Pleasant St.	
5. Bill Brady	176 W MAIN ST	
6. Ruth P. Cohe	77 Washington St	
7. Kerry N. Gmelkowing	9 Grove Street	
8. Zeeda L. Moore	Rattlesnake Hill Rd	
9. Richard M Harrison	80 Sandy Pond Rd.	
10. Kay Stapleton	6 Page St.	
11. Jean Stevens	18 Pond St.	
12. Alice L Langford	44 Jackson St.	
13. [illegible]	132 West Main St.	
14. Steve Moran	8 VERNON ST	
15. Carmen Howe	28 Fletcher St.	

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Name	Address	Telephone
1. [illegible]	5 [illegible] Ayer	772-3760
2. Carol A Hale	10 Wachusett Ave Ayer	772-9214
3. Chenok Pang	30 Third Ayer	772-0455
4. [illegible]	36 Sandy Pond Ayer	772 5421
5. [illegible]	36 Wright Rd Ayer	772-4311
6. Jack [illegible]	123½ W main St #3	772-3608
7. John M. Loughlin	19 Prospect	772-4108
8. Nancy G Gasley	47 Groton School Rd	772-7154
9. [illegible]	47 Groton School Rd	772-7154
10. Audrey Belanger	4 Magnolia Dr. Ayer	772-4022
~~11.~~ Melissa Lizotte	73 Blossom St Fitchburg	345-8735
~~12.~~ Louis Torres	73 Blossom St Fitchburg	Same
13. Gordon E. Burns	121 Willard Ayer	—
14. Dick Fletcher	26 Howard ST - Ayer	
13 ~~15.~~ Donald A Cote	49 Mulberry Cir Ayer	772-0927

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Name	Address	Telephone
1. Mabel J Hay	58 Groton Harvard Rd	
2. Robert Maxwell	32 Lincoln St.	
3. B Macedo Mark	—	—
4. Linda Duncan	172 W. Main St	
5. Karen Finley	24 Pingry Way	
6. Richard S Finley	24 Pingry way	
7. Ruth D. MacNeil	10 Cambridge St. #2	
8. Edward J. MacNeil	10 Cambridge St #2	
9. Ingrid Tapp	11 Sandy Pond Rd.	
10. Patricia Rupp	9 Pearl St.	
11. Harris Gerber	79 School House Rd.	
12. Patricia Gracklan	12 High St.	
13. Norma M. Parker	3 Norwood Ave	
14. Diane Lariviere	10 Amandrey Way	
15. Vera M Wallace	44 Atherton St	

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Name	Address	Telephone
1. Louis P. Vaua	6 Western Ave Ayer	7724845
2. Jason Blood		
3. [illegible]	7 Isaacs Ln Ayer	772-0255
4. [illegible]	108 Eastman Ayer	772-6794
5. [illegible]	75 Sandy Pond Rd. Ayer	772-1666
6. Eric Robinson	1 Rik St Ayer	772 0757
7. [illegible]	154 Willard Ayer	772-3072
8. [illegible]	175 Willard Ayer	772 1279
9. Wallace [illegible] Thorson	[illegible] E. Main St Apt 2 Ayer	
10. Ruth Ethemann	5 Carl St	772-5896
11. [illegible]	41 W. Main St	772-7817
12. Karen Malcolm	9 Main St	772 9037
13. Robert [illegible]	61 West Main	772-4057
14. Deborah Stevens	4 Mountain Ave	772 4401
14 ~~15.~~ Jamie Gibbons	5 Forest St	772-9092

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Name	Address	Telephone
1. James D. Janowskiewicz	5 Groton School RD	772-0868
2. Michael Crossman	36 Pinoridge Dr Ayer	772-0533
3. Stanley Mahoney	3 Park St Ayer	772-7383
4. Frank Dagostino-Ford	5 Groton School Rd	
5. William E. Dutton	155 Sandy Pond RD	772-6822
6. Helen Campbell	155 Sandy Pond Rd	772-6822
7. Ernest Blasetti	44 Jackson St	772-4216
8. Andrew A. Maier	7 Groton Harvard Rd.	772-2179
9. Nelli A. Amuzinski	75 Groton School Rd Ayer	772-3061
10. Ray Coffey	10 NASHUA ST., AYER,	772-2233
11. Kenneth O. Lewis	12 Wachusett Cir Ayer	772-6644
~~12.~~ Ben Fox	30 South St Townsend	
13. Robert Barry	14 Page #6	Ayer 547-7641
14. Emanuel E. Sifakis	21 High	Ayer 772-2354
14 ~~15.~~ Stanley Yas	77 Pine Ridge Drive	772-6939

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Name	Address	Telephone
1. [illegible]	16 Madigan Lane Ayer	772-0875
2. George Lagman	55 Littleton Rd Ayer	772 4710
3. [illegible]	17 Markham Circle Ayer	
4. [illegible]	76 Pleasant St. Ayer	01432
5. [illegible]	3 McDowell St. Ayer	01432
6. [illegible]	75 Groton Sch. Ayer	01430
7. Carmelina Dailey	53 Main St. Ayer	01432
8. [illegible]	5 Doue Rd	AYER 01432
9. Bonnie Foote	12 Jonathan Dr.	Ayer 01432
10. [illegible]	142 Snow Pond Rd	AYER 01432
11. Derek Donahue	58 Pine Ridge Dr.	AYER 01432
12. [illegible]	3 McDowell STREET	Ayer
13. [illegible]	3 Old Town Rd	Ayer 01432
14. [illegible]	30 Fletcher St.	Ayer 01432
15. [illegible]	41 W. [illegible] St.	Ayer [illegible]

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Name	Address	Telephone
1. Wesley Beckles	17 Main St Ayer MA Apt 2	
2. Jaime M Young	29 Willard St Ayer	772-5065
3. Thomas Adamson	608 Central Ave Ayer	772-6834
4. Jay Kerr	145 Oakridge Dr Ayer	772-4979
5. Helen R. Smith	4 Mountain Ave Ayer	772-4407
6. Alvin Rutwillow	20 West Stayer Apt 2R (3rd floor) Ayer	N/A
7. Barbara Mack	POB 663 Ayer	MA 01432 772-2178
8. Ellen M. Watson	149 Sandy Pond Rd Ayer Ma	772-2741
9. Richard K Allison	64 Tahanto Tr Harvard MA.	01451
10. Yvonne Melanson	22 Myrick St Ayer Mass	01432
11. Judy Conger	65 Washington St Ayer MA	01432
12. Clark W Paige, Jr	91 Groton School Rd Ayer, MA	01432
13. [illegible]	37 Cranberry Ln Harvard MA	01451
14. Allison B Busack	55 Littleton Rd 24-C Ayer MA	01432
13 15. Joseph M Iannelli	4 Pine ST APT #2 AYER MA	01432

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Name	Address	Telephone
1. K DAVID RUE	21 Park St. Ayer	772-7550
2. Clayton Arvidson	21 Fitchburg Rd	772-4454
3.	20 Oakridge Dr	772-2777
4. Thomas E Buck	41 PARK St	772-5639
5.	139 Central	772-0445
6.	5 MARK ST	772-2347
7. Norman E. Foley	6 WILLARD St	
8. Noreen A. Ottole	40 Washington St.	772-9551
9.	8 Holmes St	772-7861
10. Jessica	8 Holmes St	772-7861
11.	2 Brilzilma Ct	772-6367
12.	11 GROTON SCHOOL RD	772-3598
13. Robert C. Folger	9 Lawton St.	772-9550
14.	102 Oakridge Dr	772-3117
15.	19 Westford Rd #52 Ayer mt	

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Name	Address	Telephone
1. [illegible]	PO Box 535 Ayer Ma 01432	
2. [illegible]	141 Willard St Ayer	772-2750
3. Melissa Simmons	21 High St Ayer	772-2285
4. [illegible]	216 Williams, Ayer	772-3868
5. [illegible]	12 Douglas Dr	772-0860
6. John H. Adams	11 Columbia St Apt 1	772-9577
7. Leah Brown	82 Groton Rd Shirley	
8. Victoria Plume	63 Lawton Rd Shirley	
9. Renie Plume	63 Lawton Rd Shirley	
10. Maurice Wilson	6 Hooter Harvard Rd Ayer	
11. Norman Daley	6 Willard St Ayer	
12. Donna Daley	6 Willard St Ayer	
13. Sean [illegible]	13 Columbia Av Ayer	
14. [illegible]	61 Parker Rd Shirley	
15. Robert [illegible]	18 Lawton St Ayer	

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Name	Address	Telephone
1. Daniel A. Locke	15 Columbia Pl.	1-978-772-5850
2. Judith A Graham	33 Washington St. Ayer MA	(978) 772-0874
3. Anne Hogan	134 Washington St Ayer, ma	(978) 772-2752
4. ~~Beatrice Dubois & Gordon Harwood~~		
5.		772 102
6. Elizabeth A. Bodurthe	28 Coolidge Rd. Ayer	772-3237
7. ~~Paul R Bodurthe~~	28 Coolidge Rd	772-3237
8. Marianne S Wood	148 Washington, Ayer	772-2613
9. Thelma Kilpatrick	5 Prospect St	Ayer MA 772 5006
10. Margaret M. McCarthy	3 Mechanic St Ext Ayer ma	772-6652
11. ~~Martha Walton~~	2 Elm Street Ayer mass	345-5966
~~12.~~ ~~Lyman Page~~	135 Warren St	Fitchburg Mass
13. Meredith Ott	18 Pond St	Ayer Mass. 5087720706
14. Barbara Orlando	9 Markham Cir	Ayer MA 5087724345
~~14~~ 11 ~~15.~~ William R. Jones	55 Littleton Rd	Ayer MA 978-772-3906

Don't Dump on Ayer.

As a resident of Ayer, we, the undersigned, state that there should be no consolidation of landfills from the former Fort Devens on land that is within the town of Ayer, adjacent to Plow Shop Pond and Shepley's Hill landfill. This site is on top of a high yield aquifer, which is the same aquifer that feeds Ayer's Grove Pond public water wells. This proposed location contains areas of porous, sandy soils which are inappropriate for a landfill. The site is 2200 feet from downtown Ayer, and even closer to Pirone Park. It will be visible from both commercial and residential areas in Ayer.

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We respectfully request that the Army seek an alternative location for consolidation of six Fort Devens landfills, which is both geologically secure *and* isolated from residential areas.

Name	Address	Telephone
1. [illegible]	58 Washington St, Ayer	Ø
2. [illegible]	122 Washington St Ayer	6281
3. Elizabeth Norris	71 Pleasant St Ayer	6279
4. Kevin O. Harden	96 Jackson St. Ayer	1791
5. Barbara White	11 Lincoln St. Ayer	0531
6. [illegible]	21 Dow, 155 Park Ayer	
7. [illegible]	56 Grove St Ayer	7651
8. Wm E McNulty	35 Groton/Harvard Rd Ayer Mass	
9. [illegible]	Ayer	425-4721
10. [illegible]	33B Sandy Island Rd.	
11. [illegible]	9 Elm St	772-2783
12. [illegible]		772-[illegible]30
13. Bruce English	103 Hazen Rd Shirley MA	
14. [illegible]	9 Fitchburg Ave	772-0771
15. [illegible]	135 Central Ave Ayer	772-4032

Petition to oppose the siting of the Army's Consolidation Landfill adjacent to Plow Shop Pond & Shepley's Hill Landfill, in the town of Ayer.

As a resident of Harvard, we, the undersigned, state that there should be no consolidation of landfills from the former Fort Devens on land that is within the town of Ayer, adjacent to Plow Shop Pond and Shepley's Hill landfill. This site is on top of a high yield regional aquifer, which is the same aquifer that feeds Ayer's and Deven's Grove Pond public wells. This proposed location contains areas of porous, sandy soils which are inappropriate for a landfill. The site is 2200 feed from downtown Ayer, and even closer to Pirone Park. It will be visible from both commercial and residential areas in Ayer.

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Name	Address	Telephone
1. Richard Stroh	94 Shaker Rd, Harvard	772-6482
2. Charlotte A. Klein	17 Blanchard Rd, Harvard	772-6354
3. [illegible]	97 Old Mill Rd, Harvard	772-6427
4. Judith Keating	62 Old Mill Rd Harvard	772-0336
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Petition to Oppose the Proposed Location of the Consolidation Landfill adjacent to Shepley's Hill Landfill, in the town of Ayer.

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Name: (PRINT)/Signature	**Address**	**Telephone**
1. Suzannah Zaborowski Suzannah Zaborowski	9 Prospect St. Ayer	772-6157
2. Paula Taylor Paula Taylor	3 Angard Street Ayer	772-9292
3. Linda Garant LINDA GARANT	38 CAMBRIDGE ST AYER	772-7148
4. Graham W. Grallert GRAHAM W GRALLERT	37 CAMBRIDGE ST AYER	772-5316
5. Heather M. Witherow Heather Witherow	7 Moore Dr. Ayer, MA	772-7643
6. Lillian Shum	Shirley	
7. Sheri A. Burnsed Sheri A. Burnsed	18 Westford Rd #47 Ayer MA 01432	772-0377
8. Mike Niskanen Mike Niskanen	29 Washington Ayer	7725343
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Petition to oppose the siting of the Army's Consolidation Landfill adjacent to Plow Shop Pond & Shepley's Hill Landfill, in the town of Ayer.

As a resident of Harvard, we, the undersigned, state that there should be no consolidation of landfills from the former Fort Devens on land that is within the town of Ayer, adjacent to Plow Shop Pond and Shepley's Hill landfill. This site is on top of a high yield regional aquifer, which is the same aquifer that feeds Ayer's and Deven's Grove Pond public wells. This proposed location contains areas of porous, sandy soils which are inappropriate for a landfill. The site is 2200 feet from downtown Ayer, and even closer to Pirone Park. It will be visible from both commercial and residential areas in Ayer.

We respectfully request that the Army seek an alternative location for consolidation of six Fort Devens landfills, which is both geologically secure *and* isolated from residential areas.

Name	Address	Telephone
1. Arthur Abelowitz	19 Woodside Rd	4563941
2. Larisa Roof	19 Woodside Rd.	" "
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Name	Address	Telephone
1. Janice J Perry	Janice Perry 420 Old Mill Rd	Harvard 772-9223
2. Helen Pirone	37 Blanchard Rd	Harvard 772 3731
3. Stephen R. Klein	17 Blanchard Rd	Harvard 772-6354
4. Bruce Pilar	40 Blanchard RD	Harvard 772 4138
5. Bill Ashe	25 Mylrick Lane	Harvard 772-6770
6. Ruth Miller	75 Westcott Rd	Harvard 456-893
7. Scott Winter	104 Old Mill Rd	Harvard 772-5703
8. Julie Bright	76 Old Mill Rd	Harvard 772-217
9. Richard F Le Boeuf	79 Shaker Rd	Harvard 772-3968
10. Richard A. Kandt	38 Stow Rd	Harvard 456-3108
11. Norton C. Miller	75 Westcott Rd	Harvard 456 8937
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Name	Address	Telephone
1. Laura Bridges	19 Columbia, Ayer	772-1541
2. Janet Psoulakis	1 Bulania Ct Ayer	772-0538
3. Anita Boisseau	3 Fletcher St Ayer	772-2471
4. Paul Boisseau	" " "	" "
5. Richard J. Markham	12 High St Ayer	772-2432
6. Robert Affleck	27 GROTON-HARVARD RD AYER	772 3963
7. Doug Becker	96 Pleasant St, Ayer	772-7402
8. Cornelius F. Sullivan	79 East Main St., Ayer	772-6260
9. Gregory G. Morris	71 PLEASANT ST AYER	772-6279
10. John Lind	95 Pleasant St Ayer	772-2074
11. Perry Goldstein	28 Maple St. Ayer	772-3163
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Name	Address	Telephone
1. [illegible]	58 Groton-Harvard Rd. Ayer	772-3259
2. Julia A. Curenzuit	5 Brilaina Ct, Ayer	772-0128
3. [illegible]	148 Williams St, Ayer	XSV PRAINES (978 772-4777)
4. [illegible]	1 Brilaina Ct. Ayer	772-0538
5. Raymond D Peneault	33 Myrick St Ayer	772-3375
6. Anne Grallert	37 Cambridge St Ayer	772 5316
7. Laura S. Nehring	35 Highland Ave Ayer	772-9749
8. Nicholas P. Layer	30 Highland Ave Ayer	772-0521
9. [illegible]	5 Calvin St	772-2000
10. [illegible]	5 Calvin St.	772-3000
11. [illegible]	20 Oak Ridge Dr	772-2777
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Name: (PRINT)/Signature	**Address**	**Telephone**
1. JEAN R. HANDRY	195 WEST MAIN ST	772-2908
2. DAVID P. LYTTLE	9-11 Washington St. Ayer, Ma.	772-9257
3. MICHAEL R. COFFENDEN	BOX 912 AYER MA	
4. Lucille DaCosta	10 Forest St Ayer	772-9119
5.	Park St	772-0444
6.	Patton Rd. Ayer	772-0421
7.	52 Washington St. Ayer	772-9205
8.	7 Pleasant St., Ayer	772-5447
9.	20 Pingree Way Ayer	772-6538
10.	110 Warren Rd	597-0237

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Name	Address	Telephone
1. Louise Rogers	4 Pierce Ave	772-2958
2. Mary Spenner	18 Myrick St	772-5911
3. Dorothy Manzoli	P.O. Box 519 Ayer	772-9085
4. [illegible]	P.O. Box 343	772-3704
5. [illegible]	75 Groton Sch Rd	772-[illegible]217
6. [illegible]	42 Highland	772-6867
7. [illegible]	78 Willard St.	772-7025
8. [illegible]	114 W. Main St	772-4588
9. [illegible]	108 EAST MAIN	772 2500
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Name: (PRINT)/Signature	**Address**	**Telephone**
1. Donald Hossenfield	20 Jackson Avenue	978-772-9089
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Name: (PRINT)/Signature	**Address**	**Telephone**
1. Mike Noga / MN Noga	131 W. Bare Hill Rd Harvard, MA 01451	978-456-9797
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Name: (PRINT)/Signature	**Address**	**Telephone**
1. PAMELA PRINGLE	31 Peabody Rd	425-4050
2. BRIAN SCHEUFELE	55 Littleton Rd	772-4021
3. Debra A. Pedrazzi	25 Coolidge Rd	772-6357
4. Murdo Macfed	22 PLEASANT	772 4896
5. Ruth Strick	135 Townsend Rd. Shirley	448-8604
6. Robert Fitzgerald	123 Turner Rd	Townsend
7. Mary C. Duffy	16 Forest St PO Box 75	Ayer
8. Marlene Chesbrough	11 School St P.O. Box 82	Ayer
9. Marcia Gibson	75 Vanderbilt St	Ayer
10. [illegible]	164-B Ayer Rd	Shirley

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Name: (PRINT)/Signature	**Address**	**Telephone**
1. Evelyn Hurley	9 Elm	
2. Janet Providakes Janet Providakes	1 Brilaina Ct. Ayer	772-0538 978 456 9297
3. Deborah Steven-Hinchcliffe D. Steven Hinchcliffe	P.O. Box 172, Still River (Harvard)	0467
4. Irene Miller	83 Washington St. Ayer, Ma. 01432	772-362
5. Patricia A Scott	1 Lake Ave Ayer MA 01432	772-904
6. DANIEL + BRENDA GLEASON	48 Groton-Harvard Rd. Ayer, MA	772-610
7. Karen + Chris Tarr	55 Littleton Rd 8C Ayer MA 01432	
8. Anne Schwegman	One East Main St. Ayer MA 01432	978 456 9297
9. Frederick Hinchcliffe II	221 Still River Rd Still River MA 01467	
10. Mr + Mrs. K. Balchunas	39 Groton-Harvard Rd Ayer	

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Name: (PRINT)/Signature	**Address**	**Telephone**
1. Cynthia Leclerc Cynthia Leclerc	P/O Box 1097	—
2. Stephen A Parry Stephen A Parry	50 Lancaster Cir Ea Harvard	978 456 [illegible]
3. APRIL R OBOEN	18 POND ST APT 2 2 AYER MA 01432	772-2461
4. Emma Jefferson EMMA JEFFERSON	1 Third St Ayer Ma 1 THIRD ST AYER	
5. Jonathan Clifton Jonathan W Clifton	16 Robbins Rd Ayer MA 01432	(978) 772-374[illegible]
6. Louise E Taylor Louise E Taylor	131 Oak Ridge DR Ayer ma	772-6236
7. Brian Sargent BRIAN SARGENT	26 ATHERTON ST AYER	772-5266
8. Lionel Picard Lionel Picard	20 Pine Ridge Dr.	772-0584
9. JOSEPH J. GARRETT Joseph J. Garrett	19 PINE RIDGE DR	772-4700
10. Kathleen Merrick Kathleen Merrick	9-11 Washington St Ap3	772 3694

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Name: (PRINT)/Signature	**Address**	**Telephone**
1. James Murphy	38 Horse Pond Rd Shirley	425-8079
2. Phyllis Robinson Phyllis Robinson	29 Third St. Ayer	
3. Elizabeth Lane	308 Nashoba St Ayer	
4. Charles Yanikoski	69 Lancaster County Rd, Harvard	456-2757
5. Philip O'Keefe	39c Wampum Circle Ayer	772-6310
6. Patrick D Nee	55 Littleton Rd #16A	772-1671.
7. Roy C. Reynolds	Ayer Ma.	01432
8. John E Tuttle	Ayer Ma	01432
9. Daniel Kelleher	Harvard Ma.	01821
10. Joan L Kilcher	Harvard MA	01451

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Name: (PRINT)/Signature	**Address**	**Telephone**
1. Mary Cabral Mary Cabral	49 Mulberry Circle	772 0927
2. Terri Smith	25 Columbia St	773-3193
3. Ray Claus Ray Claus	5A Samantha Ln	—
4. Joseph Rock	10 West St Apt 2B Ayer Mass	
5. Neil Woodward NEIL WOODWARD	120 HAZEN RD SHIRLEY, MA	425-2448
6. JOHN CROTHERS John Crothers	154 D Rt 2B Shirley	425-9640
7. Bev Andre Bev Andre	80 E. Main St Ayer	772-2128
8. Eldon Strachl Eldon Strachl	37 Prospect Hill Rd HARVARD	456-8805
9. Dale Taylor	14 Third St Ayer	772-5901
10. THOMAS PRESCOTT	18 Westford Rd #36 Ayer	772-6126

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Name: (PRINT)/Signature	**Address**	**Telephone**
1. Ruth C. Robinson Ruth C. Robinson	SHIRLEY	425-2436
2. CATHRYN MADIGAN Cathryn Madigan	PO BOX 533 Ayer	772-2189
3. TIMOTHY F HOLLAND Timothy F. Holland	15 TAFT ST AYER	772-0806
4. JAMES O - TALBERT	55 Groton Sch Rd Ayer MA	
5. Linda Roth	McGrove St Ayer MA	772-1277
6. JAMES E. ELLIS	123 S. SHAKER RD. HARVARD, MA	772-0945
7. Vicary Maxant VICARY MAXANT	32 GLENVIEW DR HARVARD	772-6188
8. Ellen Whitman Gerard F. Gunter	149 Sandy Pond Rd Ayer Station Box 5 Ayer	772-2740 772-2232
9. David D. Smalley David D. Smalley	20 Chapel	Shirley
10.		

Petition to Oppose the Proposed Location of the Consolidation Landfill adjacent to Shepley's Hill Landfill, in the town of Ayer.

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We respectfully request that the Army seek an alternative location for consolidation of six Fort Devens landfills, which is both geologically secure *and* isolated from residential areas.

Name: (PRINT)/Signature	**Address**	**Telephone**
1. Ronald J. DeFilippo Ronald J. DeFilippo	15 Pine St. Ayer	772 0217
2. Nancy Marino Nancy Marino	25 Groton School Rd	7720214
3. Geraldine C. Flynn Geraldine C. Flynn	237 Snake Hill Rd	772 3415
4. Henry L. Kelley Henry L. Kelley	55 Center Rd Shirley, MA 01464	
5. Melissa Wood Melissa Wood	134 Great Rd Shirley	
6. Steve Wood STEVE WOOD	Same	
7. John Watson John Watson	149 Sandy Pond Rd. Ayer	772-2740
8. Robert Farwell Robert Farwell	100 Prospect Hill Rd. Harvard	456-8213
9. Helen Persuitte HELEN PERSUITTE	49 E. MAIN ST AYER	772-2139
10. JAMES M HOFFMAN	18 POND ST AYER MA	772719

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Name: (PRINT)/Signature	**Address**	**Telephone**
1. Young Parsons Young Parsons	65 Fitchburg Rd Ayer (772-7787)	
2. Jin Hong Jin Hong	77 Pine Ridge Dr. Ayer 772-6939	
3. Steve Clifton Steve Clifton	110 Robbins Rd Ayer (772-9740)	
4. Bill Uber Bill Uber	1 Mt Henry Rd Shirley	
5. Stella A. Herbert	131 Oakridge Rd, Ayer 772-	
6. Nancy J Frasca	Willow Rd Ayer	
7. Thomas F. Lynch Jr. Thomas F. Lynch Jr.	Haven Rd Shirley	425-5860
8. Robert H. Pirone Robert H. Pirone	Groton St Ayer	772-5844
9. Eileen P Breault Eileen P Breault	139 Willard ct	770 5263
10. Cindy Costa - Cindy Costa	99 Hillbrook Circle	772 0927

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Name: (PRINT)/Signature	**Address**	**Telephone**
1. Arthur J. Bousseau	78 Pleasant St	
2. William Hamer	99 Fitchburg Rd	
3. Walter C Parr	19 Williams St	
4. Marmont. White	14 Gardner Ln.	772-9431
5. Kenneth Nolle	73 Pleasant St	772 5520
6. Martha Nolle	"	"
7. Paul Cirillo	100 Central Ave	772 1677
8. Richard M Harrison	80 Sandy Pond Rd	772-5012
9. Walter Vedder	39 SANDY POND RD	
10. Alan J. Cole	43 Pleasant	Ayer Ma. 01432

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Name: (PRINT)/Signature	**Address**	**Telephone**
1. MABEL T SAWYER	3 LITTLETON RD	456-8042
2. Anthony Fiore Anthony Fiore	37 Blanchard Rd	772-3731
3. Catherine Shuttleworth Catherine Shuttleworth	80 Walker Rd.	425-9235
4. Theresa A Messer THERESA A. MESSER	143 Snake Hill Rd. Ayer	772-0769
5. Richard E. Tyler Richard E Tyler	112 Ayer Rd. Shirley	425-2040
6. Michael Akes Michael Akes	17 Fitchburg Rd. Ayer, Ma.	
7. John Morgan JOHN MORGAN	50 Shirley St Ayer	772-2566
8. Beatrice Briggs	18 Lawton St	Ayer
9. William E Felton's William E Felton	14 Depot	456 8829
10. mike whittenberg Mike Whittenberg	170 E Ayer Rd Shirley	425-4785

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Name: (PRINT)/Signature	**Address**	**Telephone**
1. Hector L. Vaggey	10 Vernon St	772-7873
2. Marion O. Cornell	18 Douglas St	772-9065
3. [illegible]	11 Douglas St	779-3435
4. Margaret B. Jean	4 Calvin St	772-9478
5. Leo J. Jean	4 CALVIN ST	772-9478
6. Richard W Agnew	111 GROTON School Rd	772 2259
7. Lisa Lucia	Park St	772-4220
8. Albert J. Lemoine	12 JACKSON ST.	
9. Arnold K Watson	86 Pleasant St	
10. Mary L. Guthrie	5 Park St.	772-2347

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Name: (PRINT)/Signature	**Address**	**Telephone**
1. [illegible]	20 [illegible] St Ayer Mass	772-3057
2. Wendy W. Parker	27 Williams St Ayer	772-1867
3. [illegible]	11 Washington St Ayer	772-5052
4. JEFFREY C. BLOM	33 MULBERRY CIR AYER	772-2207
5. Michael [illegible]	5 [illegible] St Ayer	
6. Kate [illegible]	Ayer	772-8130
7. Beatrice M. Taylor	171 Moore Drive, Ayer	772-2115
8. [illegible]	GORDON RAE 24 Bright St	772-5583
9. Paul Clancy	PAUL CLANCY, 50 Sandy Pond Rd, Ayer	772-0554
10. [illegible]	[illegible] 17 MAPLE ST, AYER	772-9201

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Name: (PRINT)/Signature	**Address**	**Telephone**
1. Roberta M Kalkut	6 Robbins Rd	772-1520
2. RENE L DUREPO SR	140 SNAKEHILL RD	772 2883
3. TOM HERON	4 AMANDREY WAY	772-0407
4. Douglas Friedrich	22C Snake Hill Rd.	772-4203
5. Muriel Conley	27 Myrick St Ayer	
6. Michael R Edwards	18 Grove St.	Ayer MA 772-2428
7. Barbara T. Ciardo	104½ Main St.	
8. Karl Proctor	14 Hatch St	Ayer MA 01432
9. Robert C. Rudge	19 Columbia	Ayer MA 01432
10. Robert Perry	264 Howard Rd.	Ayer MA

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Name: (PRINT)/Signature	**Address**	**Telephone**
1. Charles Jones	185 W Main St Apt Ayer Ma	
2. Tim Day	44 Fitchburg Rd Townsend MA	
3. Mike Kurtz	100 Washington ST Ayer, MA.	
4. GREGORY NONIS Gregory N. Nonis	71 PLEASANT ST.	978 772 6279
5. Dave Dewling	5 Dunster St Ayer	772 0919
6. Beatrice Twombly	91 W. MAIN ST Ayer	No Phone
7. Jane M. Williams	33 Shaker Rd., Harvard	456-3873
8. Sue Copeland	165 Great Rd. Shirley MA	425-9850
9. Annette Campbell	143 Litchfield Rd Fitchburg	
10. Linda Wheary	11 Washington St. Ayer	772-5052

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is both geologically secure *and* isolated from residential areas.

: (PRINT)/Signature	Address	Telephone
Jim M. Morales Kim M Morales	8 Moore Dr	772-7185
Crystal Salter	75 Sandy Pond Rd #1 Ayer	772-4808
Timothy Lee Pinney Jr	8 Whitcomb Ave. Ayer	772-6291
James M Fay SR	1 Victor Dr Ayer,	772-7303
Rochelle A Choiriere	4 Mechanic St. Ext	772-2509
Anne McPartlan	13 Brook St. Ayer	772-0340
Martha Dallas	5B Shirley St., Ayer	772-5258
Roland P. Metcalf	19 Shirley St.	772-9529
Donna Jones	9 Elm St	772-2783
Hector Jones	9 Elm St	

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Name: (PRINT)/Signature	**Address**	**Telephone**
1. Gerald Norton	1 Gardner Lane	772-1715
	Ayer MA 01432	
2. George Granville	214 Littleton Rd	456-3187
	Harvard MA 01451	
3.	3 Church St	425-6745
Dean H Martin	Shirley MA	
4. Marianne Breyer	21 Bellatrix Lane	772-5962
	Harvard	
5. Rowland Cooper	58 Main St	772-0859
	Ayer MA	
6. Oscar Goss		772-2033
99 E. Main St		
7. Sam L. Tripp		772-2537
41 E Main St	Ayer, MA	
8. Tony Choi	100 Washington St. Apt. 2	7720787
9. John E Thomas	3 East Main St	772-7466
10. Danny G Smith	61 Willard St	772-2187

COMMONWEALTH OF MASSACHUSETTS
MASSACHUSETTS SENATE
STATE HOUSE, BOSTON 02133-1053

SENATOR ROBERT A. DURAND

MIDDLESEX AND WORCESTER
DISTRICT

ROOM 109C

TEL. (617) 722-1120

ASSISTANT MAJORITY LEADER

March 4, 1998

Jim Chambers
U.S. Army, Reserve Forces
Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Dear Mr. Chambers,

In addition to our previous statements regarding the Army's "Proposed Plan for SAs 6, 12 and 13, and AOCs 9, 11, 40 and 41," we would like to formally request the following changes.

Throughout the public hearing process, it has become increasingly clear that the proposed Shepley's Hill landfill is an unacceptable solution to waste disposal problems posed by the remediation process. Recent information obtained from the Ayer Board of Selectmen and the Massachusetts Development Finance Agency (MDFA) suggests that off-site disposal of the retrieved landfills would match cost estimates for the current Proposed Plan. In the eighteen months since the Army originally considered and dismissed the possibility of removing excavated waste from Devens, the waste disposal industry has become more competitive. It is possible that off-site disposal is now not only the preferable option, but also the most economical. In light of new information and industry changes, we are requesting that the Army reanalyze the potential use of rail transport for disposal of some or all of the retrieved landfill waste. Any further analysis of disposal methods must also include the full remediation of AOC 11.

If the Army cannot endorse off-site disposal of landfill waste, it is crucial that the evaluation process for possible landfill consolidation sites on Devens recognize a different set of parameters. Possible consolidation sites should not be located on or near an aquifer, potential conservation or wildlife areas, or within the hundred-year flood plain of the Nashua River.

Again, we appreciate your assistance with this matter. Please let us know if you have any questions.

Very truly yours,

1/2

ROBERT A. DURAND	GEOFFREY D. HALL	ROBERT S. HARGRAVES
Assistant Majority Leader	State Representative	State Representative

CC: Governor A. Paul Cellucci
Senator Edward M. Kennedy
Senator John F. Kerry
Congressman Martin T. Meehan
Representative Patricia Walrath
Jim Byrne, US EPA
Jim Murphy, US EPA
Lynn Welsh, MADEP
Board of Selectmen, Ayer
Board of Selectmen, Harvard
Board of Selectmen, Shirley
Bob Levite, Nashua River Watershed Association
Heidi Roddis, Massachusetts Audubon Society
Laurie Nehring, PACE

RAD/rdc

PACE

PEOPLE OF **AYER**
CONCERNED
ABOUT THE
ENVIRONMENT
35 Highland Avenue, Ayer MA
01432
(978) 772-9749

Mr. James Chambers
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

March 9, 1998

Dear Mr. Chambers:

On behalf of the concerned citizens of Massachusetts, I respectfully submit the enclosed petitions, with 393 signatures, all of which oppose the Army's proposed location for the consolidation landfill, adjacent to Shepley's Hill landfill.

Furthermore, a large number of these citizens are concerned about the impact of Shepley's Hill landfill, which continues to leach high concentrations of pollutants, particularly arsenic, into the waterways in and around Ayer. The arsenic contamination caused by Shepley's Hill landfill was clearly prominent as a continual and severe problem in the Army's January 1998 *Draft Five Year Review: Shepley's Hill Landfill Long Term Monitoring*, where new monitoring wells identified arsenic at up to 3300 ug/L! [The MCL for arsenic is 50 ug/L.] PACE continues to be very concerned about these high levels of arsenic.

These citizens respectfully request that the Army address the threats to the environment created by Shepley's Hill landfill, and they request that the Army seek an alternative location for consolidation of the six Fort Devens landfills which is both geologically secure and isolated from residential areas.

Sincerely,
Laurie S. Nehring
Laurie S. Nehring,
PACE President

Enclosures: Signed petitions

CC: Senator Edward M. Kennedy with enclosures
Senator John F. Kerry with enclosures
Congressman Martin T. Meehan with enclosures

Senator Robert A. Durand
Representative Robert S. Hargraves
Representative Geoffrey D. Hall

Mr. Robert Bois, MADEP
Mr. James Kreidler, Ayer Town Administrator
Mr. Robert Levite, NRWA
Rev. Phil Goff, Community RAB Member, Ayer
Ms. Heidi Roddis, Community RAB Member, Shirley
Ms. Lucy Wallace, Devens Open Space Task Force
Mr. C. David Gordon, Chief Correspondent,

RECEIVED MAR 9 1998

MASSDEVELOPMENT

MASSACHUSETTS DEVELOPMENT FINANCE AGENCY

75 Federal Street
Boston, Massachusetts
02110

Tel: 617-451-2477
800-445-8030

Fax: 617-451-3429
617-727-8741

www.massdevelopment.com

March 4, 1998

James C. Chambers, Environmental Coordinator
U.S. Army, Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Dear Mr. Chambers: Jim

On behalf of MassDevelopment, I would like to take this opportunity to reiterate, for the record, the Agency's position regarding landfill remediation at Devens.

MassDevelopment asks that the Army and the Base Cleanup Team re-evaluate the feasibility of off-site disposal of the landfill materials. Our research has indicated that transportation of the materials by rail and disposal at an off-site location is far less costly than original estimates for off-site disposal. We believe there are two reasons for the decreased cost: the availability of rail transport and a stronger market in other parts of the country for the use of private landfills.

We would further encourage the BCT to conduct this evaluation in as expeditious manner as possible. It is imperative that a solution be identified, and progress made towards it, within the timeframe that was envisioned at the start of the public participation process which began on Dec. 8, 1997.

Should you require any assistance from the staff of MassDevelopment, please do not hesitate to call upon us.

Sincerely,

Michael P. Hogan
Executive Director

MPH/b

ARGEO PAUL CELLUCCI
Governor

ROBERT L. BEAL
Chairman

EDWARD H. LINDE
Chairman

MICHAEL P. HOGAN
Executive Director

RECEIVED
MAR 5 1998

1/8/98
David Bodurtha
28 Coolidge Road
Ayer, MA 01432

QUESTIONS/REQUESTS:

1. Who has a say in how this happens beyond the Army, DEP, EPA, do the surrounding communities and the Devens development committee?
2. I would request that at least one additional public hearing be held after you have answered the questions presented during the public submittal period.
3. I am requesting a published list of:
   - 3.1 The sites that were investigated.
   - 3.2. The consideration criteria and if items were weighted.
   - 3.3. A summary of the results of the study with a positive or negative statement for each associated criteria.
     - 3.3.1. How much weight was given as a negative that this new landfill would be located in close proximity to two major bodies of water?
     - 3.3.2. How much weight was given as a negative that this new landfill would be located within a high + medium yield aquifer?
     - 3.3.3. How much weight was given to the fact that this purposed location would also consolidate the monitoring effort with the present landfill? Stated more plainly was the fact that a landfill was already located here given any consideration?
4. Was a cost study done for local consolidation and for total removal off-site of the materials? If so is there a summary of this study with cost considerations?
5. If this landfill is sited within the Devens boundaries, will a plan be presented to the surrounding communities for:
   - 5.1. How hazardous materials would be separated from materials that would be placed within this new landfill? Inclusive of:
     - 5.1.1. At what granularity will the soil be tested?
       - 5.1.1.1. By bucket load, truckload, every 10/20/100 sq. yd.
     - 5.1.2. Will there be an on-site test lab, if so operated by whom?
     - 5.1.3. Will there be regular independent analysis of the samples as a monitoring means?
   - 5.2. A detailed diagram made available of the construction of this “state-of-the art” landfill cell?
   - 5.3. A trucking plan for removal of the hazardous materials including any leachaid collected from the new landfill.
   - 5.4. Public access to information on what was found at each site and at what levels.
6. Presently at the Sheiply’s landfill there continues to be leaching from the landfill into Plowshaw pond and the aquifer. If the present cap at Sheiply's does not resolve the continuing problems with that landfill how will the placement of this purposed landfill affect the future clean up of the Sheiply’s?

STATEMENTS/QUESTIONS

- This landfill will be fully or partially located within a high yield aquifer, or best of a worst case fully within a medium yield aquifer. Any failure of the landfill, no matter how quickly resolved, has the possibility of contaminating the aquifer. During discussions that I have heard no one has been able to state that there is NO possibility of a failure at the purposed landfill. The reason that a few of the sites are being moved is to get them away from a water source or aquifer. State of the art or not, materials removed from one aquifer should not be placed into another or the same aquifer.
- If the materials from the consolidation can not be removed completely from Devens then the new landfill should be located in a remote location. It should be remote from the surrounding towns, not just remote from the areas of Devens that are slated for development? The presently purposed site is NOT remote. If this means a parcel of land within Devens cannot be developed, then that is the price that needs to be paid to assure the present and future health of residents of the surrounding towns and their water.
- I believe that the easy route was taken by placing this new landfill next to an existing landfill that is still showing problems with leaching.

- ~~Why are the contaminants not listed on the presentation materials; only metal, tree stumps, glass, etc. all none dangerous sounding materials.~~ DRB

~~It is my understanding that questions can be submitted and will be answered in writing, I would like to submit my questions and briefly read them to you. Can you explain how your answers be published or distributed?~~ DRB

COMMONWEALTH OF MASSACHUSETTS

MASSACHUSETTS SENATE

STATE HOUSE, BOSTON 02133-1053

SENATOR ROBERT A. DURAND
MIDDLESEX AND WORCESTER
DISTRICT
ROOM 109C
TEL. (617) 722-1120

ASSISTANT MAJORITY LEADER

January 14, 1998

Jim Chambers
U.S. Army, Reserve Forces
Training Area
BRAC Environmental Office
30 Quebec St., Box 100
Devens, MA 01432-4429

Dear Mr. Chambers,

I would like to formally request the following changes to the Army's "***Proposed Plan for SAs 6, 12 and 13, and AOCs 9, 11, 40 and 41.***"

The Plan proposes surface debris and "hot spot" removal at AOC (Area Of Concern) 11, with long-term monitoring of the site by the Environmental Protection Agency. I believe that anything less than the full remediation of AOC 11 is an unacceptable proposal. The environmental sensitivity of the location of AOC 11 cannot be underestimated: debris was placed in a wetland area, encroaching on the Nashua River and lying within the hundred-year flood plain. It is disturbing to know that AOC 11 was created in violation of section 404 of the 1972 Federal Clean Water Act. Given that an opportunity has arisen to correct this oversight, I find it perplexing that the Army has not taken the initiative to rectify their error.

No one can be absolutely certain what each of these sites (with the exception of Study Area 6) contains. It is entirely possible that the remediation of any one area will reveal dangerous levels of previously undetected contaminants. After years of hard work, local stewardship of the Nashua River has finally begun to repair damage inflicted by a century of unregulated growth. It is illogical to put this crucial natural resource at risk after so much energy has been expended to restore the Nashua and its watershed to good health.

I am also concerned about the decision to locate the landfill for the consolidation of AOCs 9 and 40 and SA 13 at Shepley's Hill. Having chaired the Joint Committee on Natural Resources for six years, and as a major proponent for water resources protection, I consider

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Shepley's Hill a poor choice for a new landfill, no matter how sophisticated its design. The Army, EPA and DEP cannot guarantee that the new landfill will not, at some point, malfunction. Without the assurance of a foolproof facility, the proximity of the Grove Pond Wells to the proposed site seems shortsighted. I therefore request that the Army reassess the location for the new landfill site.

I appreciate your attention to this matter. Please let me know if you have any questions.

Very truly yours,

ROBERT A. DURAND
Assistant Majority Leader

cc: Governor A. Paul Cellucci
Senator Edward M. Kennedy
Senator John F. Kerry
Congressman Martin T. Meehan
Representative Robert Hargraves
Jim Byrne, EPA
Lynn Welsh, DEP
Bob Levite, Nashua River Watershed Association
Laura Bridges, PACE
Laurie Nehring, PACE

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Ecological Services
1033 South Main street
Old Town, Maine 04468

March 3, 1998

Mr. James Chambers
U.S. Army Reserve Forces Training Area
BRAC Environmental Office
30 Quebec Street, Box 100
Devens, MA 01432-4429

Dear Mr. Chambers:

Attached is the formal comment I read at the February 25 public meeting on the Proposed Plan for Study Areas 6, 12, 13, and Areas of Contamination 9, 11, 40, and 41. Please include my comment in the Administrative Record. Thank you.

Sincerely,

Steven E. Mierzykowski
Fish & Wildlife Biologist

Attachment

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STATEMENT OF STEVE MIERZYKOWSKI
WILDLIFE BIOLOGIST, U.S. FISH AND WILDLIFE SERVICE
February 25, 1998

Thank you for this opportunity to publicly comment on the Army's Proposed Plan for several hazardous waste areas at Devens. Over the past nine years, the U.S. Fish and Wildlife Service has provided the Environmental Protection Agency, Massachusetts Department of Environmental Protection, and the Army with technical assistance regarding the investigation and remediation of many Devens hazardous waste sites. In several instances, we have supported remedial actions developed by the Devens BRAC Environmental Office. However, we are greatly concerned with the course of action the Army is currently proposing for some Devens hazardous waste sites. The U.S. Fish and Wildlife Service does not support the Proposed Plan for Study Areas (SA) 6, 12, 13, and Areas of Contamination (AOC) 9, 11, 40, and 41.

CERCLA, or the Superfund Law, requires site remedies to be protective of human health and the environment. After reviewing the remedial investigation reports, and considering the settings of certain sites within the Devens landscape, we conclude that the No-Further-Action proposals for AOC 41 and SA 12, and the minimal action plan for AOC 11 are not protective of the environment. All three sites border ecologically-sensitive areas. AOC 41 is only 100 feet from New Cranberry Pond and SA 12 is within the floodplain of the Nashua River. AOC 11, however, is our greatest concern. This landfill site is **within** a wetland, only 50 feet from the Nashua River, and immediately adjacent to a new parcel scheduled for inclusion in the Oxbow National Wildlife Refuge. AOC 11 has elevated concentrations of DDT in surface soils, subsurface soils, and wetland sediments. DDT is an organochlorine pesticide that persists in the environment for decades and has a well-documented history as a threat to wildlife resources. The site is also contaminated with trace elements. The removal of surface debris from AOC 11 would not adequately address the contaminant threats posed by this site. We strongly believe AOC 11 is a hazard to wildlife within the site's wetland and a threat to aquatic resources of the Nashua River. The remediation and subsequent restoration of AOC-11 would be the most appropriate long-term actions to protect the environment and an approach that would be entirely consistent with the objectives of CERCLA.

There is a general reluctance among natural resource management and regulatory agencies to disturb wetlands in order to remove contaminants. We understand this reluctance. The Service is committed to protecting and conserving the Nation's wetlands, and we do not often recommend disturbing them. However, certain contaminants such as PCBs, mercury, and DDT, are particularly hazardous to fish and wildlife. These contaminants readily accumulate in organisms and increase in concentration, or biomagnify, at each step up the food chain. If these contaminants occur in wetlands at elevated concentrations as they do at AOC 11, the well-being of the wetland warrants more aggressive actions than the simple removal of surface debris. While we commend the Army's recognition of the functions and values of wetlands, in this instance we do not concur that leaving contamination in place at AOC 11 would be less harmful than remediation.

(over)

EDWARD M. KENNEDY
MASSACHUSETTS

United States Senate

WASHINGTON, DC 20510–2101

March 9, 1998

Honorable Mike Walker
Acting Secretary of the Army
Room 3E700
The Pentagon
Washington, DC 20310-0101

Dear Secretary Walker:

I have worked closely with the local communities on priorities for the clean-up and reuse of Fort Devens in Massachusetts since the Army announced the closing of the base. An essential part of this clean-up is the remediation of the landfills on the base, which is critical to the public health of the communities surrounding Fort Devens and to the redevelopment of the former base.

In July 1997, the Massachtusetts Congressional delegation urged former Secretary of the Army Togo West to excavate and consolidate the seven landfills. The Army, the U.S. Environmental Protection Agency, and the Massachusetts Department of Environmental Protection have worked hard to move toward this goal. Unfortunately, the draft proposal that is now being reviewed is receiving extensive opposition.

The proposed plan seeks to consolidate three Areas of Contamination (AOC) and relocate them to a lined landfill at the existing Shepley's Hill Landfill. It would remove only visible debris from AOC 11, with long-term monitoring of that site. The plan offers no significant action on the three remaining landfills -- it proposes only to remove the surface debris and then implement long-term monitoring.

Residents and public officials of the Town of Ayer are extremely concerned about the proposed consolidation site at Shepley's Hill. They are particularly concerned about the possibility of future groundwater contamination, since the site is on top of a high-yield aquifer.

While the proposal to double line the landfill is necessary, it does not allay the fears of the residents, who strongly prefer off-site disposal. They are working with the Massachusetts Development Finance Agency (MDFA) to explore the economic feasibility of the off-site option. I urge the Army and the EPA to fully explore the proposal for off-site disposal with the MDFA.

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In addition, the communities are deeply concerned about the decision not to include AOC 11 in the consolidation and remediation plan. This landfill abuts the Nashua River, which has in recent years begun to be restored. The environmental sensitivity of the placement of AOC 11 should be examined, and remediation of the site should be given a high priority.

I appreciate the extension of the public comment period and the Army's efforts to educate the public on these issues. I urge you to give the highest consideration to the concern of the communities on these very important environmental and public health issues. I look forward to working closely with you on these issues.

Sincerely,

Edward M. Kennedy

2400 JFK Federal Building
Boston, MA 02203

APPENDIX D - ADMINISTRATIVE RECORD INDEX

U.S. Army Reserve Forces Training Area

Study Areas 6, 12, and 13
And
Areas of Contamination 9, 11, 40, and 41

Administrative Record File

Index

Prepared for
New England Division
U.S. Army Corps of Engineers

By

HARDING LAWSON ASSOCIATES
107 Audubon Road, Wakefield, Massachusetts 01880 (718) 245-6606

Introduction

This document is the Index to the Administrative Record File for Study Areas 6, 12, and 13 and Areas of Contamination 9, 11, 40, and 41. Section I of the Index cites site-specific documents, and Section II cites guidance documents used by U.S. Army staff in selecting a response action at the site. Some documents in this Index may be cited, but not physically included in the file. If a document has been cross-referenced to another Administrative Record File Index, the available, corresponding document review comments and responses have been cross-referenced as well.

The Administrative Record File is available for public review at USEPA Region I's Office in Boston, Massachusetts, at the Devens Base Realignment and Closure (BRAC) Office, Devens, Massachusetts, and at the Ayer Town Hall, 1 Main Street, Ayer, Massachusetts. Supplemental/Addendum volumes may be added to this Administrative Record File. Questions concerning the Administrative Record should be directed to the Devens BRAC office.

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

Section I

Site-Specific Documents

ADMINISTRATIVE RECORD INDEX FILE
For
Fort Devens Record of Decision Sites
Compiled May 24,1999

		Filed in Group:	Study Areas:
1.0	Pre-Remedial		
	Comments		
	1. MADEP Comments on the Draft Work Plan Predesign Field Work and Landfill Study, (ABB-ES, Jun. 1994) (July 27, 1994).	Groups 3,5&6	12, 13
1.2	Preliminary Assessment		
	Reports		
	1. Memorandum Work Plan, AREE 70, AREE 69B, and Cold Spring Brook Supplemental SamplingEvent, Base Realignment and Closure Environmental Evaluation (BRAC EE), Fort Devens, Massachusetts (June 1995).	Group 1A	40
	2. Landfill Study Data Package, Fort Devens, MA (December 1994)	Groups 2&7	6, 9, 11, 12 13, 40, 41
	3. Technical Report, Site 9 Underground Storage Tank Closure UST Nos. 0058, Building No. 3713, Fort Devens, Massachusetts (October 25, 1993).	Groups 3,5&6	9
1.3	Site Inspection and Site Investigation		
	Reports		
	1. Final Cold Spring Brook Site Investigation Work Plan, Fort Devens Cold Spring Brook Site Investigation (November 1994).	Group 1A	40
	2. Revised Final Site Investigation Report, Groups 2 & 7 and Historic Gas Stations, Volumes I, II, III and IV (October 1995).	Group 1A	40
	3. SI Data Package Meeting Notes for Groups 2 & 7 and Historic Gas Stations (April 27, 1993).	Groups 2&7	12, 13, 41
	4. Final SI Report, Groups 2 & 7 and Historic Gas Stations, Volume I - IV (May 1993).	Groups 2&7	12, 13, 41
	5. Supplemental Site Investigation Data Package Groups 2 & 7 and Historic Gas Stations (January 1994).	Groups 2&7	12, 13, 41

6.	Supplemental Site Investigation Data Package Meeting Notes Groups 2 & 7 and Historic Gas Stations (March 16, 1994).	Groups 2&7	12, 13, 41
7.	Supplemental SI Data Package Meeting Notes, Fort Devens SI, Groups 2 & 7 (March 30, 1994).	Groups 2&7	12, 13, 41
8.	Final Task Order (Site Investigations) Work Plan (September 1992).	Groups 3, 5&6	9
9.	SI Data Packages (December 1992).	Groups 3,5&6	41
10.	Final Site Investigation Report - Groups 3, 5, & 6, Fort Devens, Massachusetts, Vol I – III (April 1993).	Groups 3,5&6	9
11.	Revised Final Site Investigation Report, Fort Devens Site Investigation, Groups 3, 5 & 6, Data Item A009 (Vol. I of II, Report Text) (January 1996).	Groups 3,5&6	9
12.	Revised Final Site Investigation Report, Fort Devens Site Investigation, Groups 3, 5 & 6, Data Item A009 (Vol. II of II Appendices) (January 1996).	Groups 3,5&6 Groups 3,5&6	9 9
13.	No Further Action Decision Under CERCLA for Study Area 09 (SA 09) North Post Landfill (December 1993).		
14.	Final Supplemental Work Plan, Main Post Site Investigation (SI), Fort Devens, MA (Revision 1) (April 28, 1993).	Groups 4,8&9	11
15.	Final Supplemental Health and Safety Plan – Main Post-Site Investigation (June 1993).	Groups 4,8&9	11
16.	Final Supplemental Work Plan - Main Post - Site Investigation (June 1993).	Groups 4,8&9	11
17.	Final Supplemental Quality Assurance Project Plan - Main Post - Site Investigation, Volume I – II (June 16, 1993).	Groups 4,8&9	11
18.	Final Health and Safety Plan, Fort Devens, MA, Revision 1 (June 16, 1993).	Groups 4,8&9	11
19.	SI Data Packages, Revision 0, Main Post Site Investigation (September 3, 1993).	Groups 4,8&9	11
20.	Final Fort Devens Main Post Site Investigation Report, Vol I - II, Revision 0 (December 15, 1993).	Groups 4,8&9	11
21.	Final Supplemental SI and RI/FS Work Plan, Fort Devens Main Post SI, Fort Devens, MA (August 1994).	Groups 4,8&9	11
22.	Final Site Investigation Report, Fort Devens Main Post, Volumes I and II, Fort Devens, Massachusetts (June 1995).	Groups 4,8&9	11

Comments

23.	MADEP Comments on the May 1993 "Final SI Report, Groups 2 & 7 and Historic Gas Stations," ABB Environmental Services, Inc. (July 9, 1993).	Groups 2&7	12, 13, 41
24.	USEPA Comments on the May 1993 "Final SI Report, Groups 2 & 7 and Historic Gas Stations," ABB Environmental Services, Inc. (July 15, 1993).	Groups 2&7	12, 13, 41
25.	Additional MADEP comments on the May 1993 "Final SI Report, Groups 2 & 7 and Historic Gas Stations," ABB Environmental Services, Inc. (July 19, 1993).	Groups 2&7	12, 13, 41
26.	MADEP Comments on the January 1994 "Supplemental Site Investigation Data Package, Groups 2 & 7 and Historic Gas Stations," ABB Environmental Services, Inc. (March 7, 1994).	Groups 2&7	12, 13, 41
27.	USEPA Comments on the January 1994 "Supplemental Site Investigation Data Package, Groups 2 & 7 and Historic Gas Stations," ABB Environmental Services, Inc. (March 23, 1994).	Groups 2&7	12, 13, 41
28.	USEPA comments to the Revised Final SI Report for Group 2&7/ Historic Gas Stations (November 9, 1995).	Groups 2&7	12, 13, 41
29.	MADEP comments to the Revised Final SI Report for Group 2&7/Historic Gas Stations (November 29, 1995).	Groups 2&7	12, 13, 41
30.	Letter acknowledging receipt of: 1. Final Remedial Investigation (RI) Reports, AOCs 41, 43G, and 43J. 2. Draft Feasibility Study (FS) Reports, AOCs 43G and 43J (February 15, 1996).	Groups 2&7	41
31.	MADEP Comments on the March 1992 "Draft SI Work Plan for Groups 3, 5, & 6," ABB Environmental Services, Inc. (April 15, 1992).	Groups 3,5&6	9
32.	USEPA Comments on the "Draft SI Work Plan for Groups 3, 5, & 6, and Project Operations Plan" ABB Environmental Services, Inc. (May 1992).	Groups 3,5&6	9
33.	MADEP Comments on the June 1992 "Draft Final Work Plan for Groups 3, 5, & 6," ABB Environmental Services, Inc. (June 21, 1992).	Groups 3,5&6	9
34.	USEPA Comments on the June 1992 "Draft Final Work Plan for Groups 3, 5, & 6," ABB Environmental Services, Inc. (July 28, 1992).	Groups 3,5&6	9
35.	MADEP Comments on the September 1992 "Final Task Order (Site Investigation) Work Plan," ABB Environmental Services, Inc. (October 26, 1992).	Groups 3,5&6	9

36.	USEPA Comments on the September 1992 "Final Task Order (Site Investigation) Work Plan," ABB Environmental Services, Inc. (October 29, 1992).	Groups 3,5&6	9
37.	USEPA Comments on the December 1992 "SI Data Package," ABB Environmental Services, Inc. (January 19, 1993).	Groups 3,5&6	9
38.	MADEP Comments on the December 1992 "SI Data Package" ABB Environmental Services, Inc. (February 3, 1993)	Groups 3,5&6	9
39.	MADEP Comments on the April 1993 "Final SI Report, Fort Devens Site Investigation, Groups 3, 5, and 6," ABB Environmental Services, Inc. (May 20, 1993).	Groups 3,5&6	9
40.	Letter expressing USEPA approval of: Revised Final Site Investigation Report, Groups 3, 5, & 6 (ABB) (February 7, 1996).	Groups 3,5&6	9
41.	Letter acknowledging MADEP receipt of: Revised Final Site Investigation Report, Groups 3, 5, & 6 (ABB) (February 15, 1996).	Groups 3,5&6	9
42.	USEPA Comments on the April 1993 "Final SI Report, Fort Devens Site Investigation, Groups 3, 5, and 6," ABB Environmental Services, Inc. (May 6, 1996).	Groups 3,5&6	9
43.	Comments from James P. Byrne, EPA Region I on the January 25, 1993 'Draft Supplemental Quality Assurance Project Plan, Health and Safety Plan, Work Plan - Main Post - Site Investigation, Arthur D. Little, Inc. (February 22, 1993).	Groups 4,8&9	11
44.	Comments Dated March 2, 1993 from D. Lynne Chappell, Commonwealth of Massachusetts Department of Environmental Protection on the January 25, 1993 Draft Supplemental Work Plan, Draft Supplemental Quality Assurance Project Plan and the Draft Supplemental Health and Safety Plan Main Post Site Investigation, Fort Devens, Massachusetts, Arthur D. Little, Inc. (March 2, 1993).	Groups 4,8&9	11
45.	Comments Dated July 20, 1993 from D. Lynne Chappell, Commonwealth of Massachusetts Department of Environmental Protection on the April 28, 1993 'Main Post Site Investigation (SI) Report, Final Supplemental Work Plan for Groups 4, 8, & 9, Fort Devens, Massachusetts (July 20, 1993).	Groups 4,8&9	11

46.	Comments Dated August 9, 1993 from D. Lynne Welsh, Commonwealth of Massachusetts Department of Environmental Protection on the June 1993 'Final Quality Assurance Project Plan Supplement A, Main Post Site Investigation; and Supplement B, Base Realignment and Closure Environmental Evaluation, Fort Devens, Massachusetts,' Arthur D. Little, Inc. (August 9, 1993).	Groups 4,8&9	11
47.	Comments dated September 15, 1993 from D. Lynne Welsh, Commonwealth of Massachusetts Department of Environmental Protection regarding status of MADEP review of the September 3, 1993 'Main Post SI Data Package,' Arthur D. Little, Inc. (September 15, 1993).	Groups 4,8&9	11
48.	Comments Dated October 27, 1993 from D. Lynne Welsh on the September 3, 1993 SI Data Package Main Post SI, Fort Devens, Massachusetts,' Arthur D. Little, Inc. (October 27, 1993).	Groups 4,8&9	11
49.	Comments Dated November 8, 1993 from James P. Byrne, USEPA Region I on the Supplemental Site Investigation for Groups 3,5, & 6 and the Main Post Site Investigation Data Packages, Arthur D. Little, Inc. (November 8, 1993).	Groups 4,8&9	11
50.	Comments Dated January 27, 1994 from Molly Elder, Commonwealth of Massachusetts Department of Environmental Protection on the December 15, 1993 'Final Site Investigation Report, Fort Devens, Main Post Site Investigation,' Arthur D. Little, Inc. (January 27, 1994).	Groups 4,8&9	11
51.	Comments Dated January 31, 1994 from James P. Byrne, USEPA Region I on the Final Main Post Site Investigation Report and Draft Supplemental SI and RI/FS Work Plan', Arthur D. Little, Inc. (January 31, 1994).	Groups 4,8&9	11
52.	Comments Dated October 4, 1994 from D. Lynne Welsh, Commonwealth of Massachusetts Department of Environmental Protection on the August 1994 'Final Supplemental SI and RI/FS Work Plan and RI/FS Work Plan, Fort Devens Main Post SI, Fort Devens, MA,' Arthur D. Little (October 4, 1994).	Groups 4,8&9	11

Response to Comments

53.	Responses on the following document: Final Site Investigation Report, Groups 2 & 7 and Historic Gas Stations, dated May 1993 (September 1993).	Groups 2&7	12, 13, 41

54. Responses on the Supplemental Site Investigation Data Package, Fort Devens Groups 2 & 7 and Historic Gas Stations (September 1994).	Groups 2&7	12, 13, 41
55. Comment and Response Package, Final Site Investigation Report, Main Post Site Investigation, Fort Devens, Massachusetts (June 1995)	Groups 4,8&9	11
56. Responses on the April 15, 1992 Comments from D. Lynne Chappell, Commonwealth of Massachusetts Department of Environmental Protection and the May 1, 1992 Comments from James P. Byrne, EPA Region I (June 4, 1992).	Groups 4,8&9	9
57. Cross Reference: Responses Dated July 28, 1992 from James P. Byrne, EPA Region I on the June 4, 1992 Comments from U.S. Army Toxic and Hazardous Materials Agency. [Filed and cited as entry number 17 in minor break 1.3 Site Inspection] (July 28, 1992).	Groups 3,5&6	9
Responses to Responses to Comments		
58. Comments on the Army Responses to Comments, Supplemental Site Investigation Data Package, Groups 2, 7, and Historic Gas Stations, Fort Devens, Massachusetts (November 27, 1994).	Groups 2&7	12, 13, 41
59. MADEP Comments on the Comment and Response Package, Final Site Investigation Report (Dec. 15, 1993), Main Post Site Investigation (SI), Fort Devens, Massachusetts (June 1995). Comments dated August 4, 1995	Groups 4,8&9	11
Meeting Minutes		
60. Main Post SI Data Package Meeting Minutes, Arthur D. Little, Inc. (December 14, 1993).	Groups 4,8&9	11
3.0 Remedial Investigation (RI)		
3.2 Sampling and Analysis Data		
Reports		
1. Results of Supplemental Sampling at Monitoring Well CSB-01, Devens Reserve Forces Training Area, Devens, MA (July 1998).	Group 1A	40
2. Data Comparison Report, Group 2 & 7 Sites Through Round 1 Sampling (March 23, 1993).	Groups 2&7	12, 13 41

Comments

3. MADEP Comments on Results of Supplemental Sampling at Monitoring Well CSB-01 (August 12, 1998).	Group 1A	40

3.6 Remedial Investigation (RI) Reports

Reports

1. Final Remedial Investigation Report, Group 1A - Volume I – II (April 1993).	Group 1A	40
2. Final Remedial Investigation Addendum Report, Volume I (December 1993).	Group 1A	40
3. Final Remedial Investigation Addendum Report, Volume II (December 1993).	Group 1A	40
4. Final Remedial Investigation Addendum Report, Volume III (December 1993).	Group 1A	40
5. Final Remedial Investigation Addendum Report, Volume IV (December 1993).	Group 1A	40
6. Final Remedial Investigation Report AOC 41, Volumes I and II (February 1996).	Groups 2&7	41
7. Final Remedial Investigation Report, AOC 11: Lovell Road Debris Disposal Area, Fort Devens, Massachusetts, Volumes I and II, Revision 1 - Arthur D. Little (August 1995).	Groups 4,8&9	11

Comments

8. USEPA Comments on the April 1993 "Final Remedial Investigation Report, Group 1A – Volume I-II," Ecology and Environment, Inc. (June 1993).	Group 1A	40
9. MADEP Comments on the April 1993 "Final Remedial Investigation Report, Group 1A - Volume I-II," Ecology and Environment, Inc. (June 18, 1993).	Group 1A	40
10. Comments on the August 1994 "Final Remedial Investigations Report, Functional Area I and II, Fort Devens, Massachusetts," Ecology and Environment (October 14, 1994).	Group 1B	41
11. MADEP Comments on the February 1996 "Final Remedial Investigation Report AOC 41", Volumes I and II, ABB Environmental Services, Inc. (March 15, 1996).	Groups 2&7	41

Responses to Comments

12. Responses on the August 1994 Final Remedial Investigation Report Functional Areas I and II, Fort Devens, Massachusetts, Ecology & Environment, Inc. (March 17, 1995).	Group 1B	41

3.7 Work Plans and Progress Reports

Reports

1. Final Work Plan and Field Sampling Plan - Remedial Investigation (February 1992).	Group 1A	40
2. Final Task Order Work Plan Area of Contamination (AOC) 41, AOC 43G, and AOC 43J, Fort Devens, Final Remedial Investigations/Feasibility Study Work Plan, Groups 2, 7, and Historic Gas Stations (August 1994).	Groups 2&7	41
3. Revised Final Task Order Work Plan Area of Contamination (AOC) 41, AOC 43G, and AOC 43J, Fort Devens, Revised Final Remedial Investigations/Feasibility Study Work Plan, Groups 2, 7, and Historic Gas Stations (October 1994).	Groups 2&7	41

Comments

4. Letter to D. Lynne Chappell. Commonwealth of Massachusetts Department of Environmental Protection Concerning confirmation that the state is waiving its right to comment on the February 1992 "Final Work Plan and Field Sampling Plan Remedial Investigations (March 3, 1992).	Group 1A	40
5. USEPA Comments on the Final RI/FS Work Plan for AOCs 41, 43G, and 43J and the Response to Comments for this Document (October 19, 1994).	Groups 2&7	41
6. MADEP Comments on the Final RI/FS Work Plan for AOCs 41, 43G and 43J and the Response to Comments for this document (October 19, 1994).	Groups 2&7	41
7. Comments from D. Lynne Welsh, Commonwealth of Massachusetts Department of Environmental Protection on the August 1994 "Final Task Order Work Plan, Area of Contamination (AOC) 41, 43G, and AOC 43J (October 21, 1994).	Groups 2&7	41

8. Comments from D. Lynne Welsh, Commonwealth of Massachusetts Department of Environmental Protection on the Revised Final Remedial Investigation/Feasibility Study, Revised Final Task Order Work Plans AOC 41, AOC 43G, and AOC 43J (December 15, 1994).	Groups 2&7	41
Response to Comments		
9. Responses on the following Document: Draft RI/FS Work Plans for Area of Contamination (AOC) 41, AOC 43G, and AOC 43J (September 1994).	Groups 2&7	41
Letter		
10. Letter to F. Timothy Prior, Fort Devens from USEPA. Concerning approval of the February 1992 "Final Work Plan and Field Sampling Plan - Remedial Investigation," Ecology and Environment, Inc. (March 19, 1992).	Group 1B	40
3.9 Health Assessments		
Reports		
1. Risk Assessment Approach Plan, AOC 11, Fort Devens Main Post SI, Arthur D. Little (December 30, 1994).	Groups 4,8&9	11
Comments		
2. Comments Dated January 23, 1995 from D. Lynne Welsh, Commonwealth of Massachusetts Department of Environmental Protection on the December 1994 'Risk Assessment Approach Plan, AOC 11, Fort Devens Main Post SI,' (Arthur D. Little, Inc.). (January 23, 1995).	Groups 4,8&9	11
4.0 Feasibility Study		
4.4 Interim Deliverables		
Reports		
1. Debris Disposal Area Technical Memorandum, Fort Devens, Massachusetts (February 1996).	Groups 2&7	6, 9, 11, 12, 13, 40, 41

Response to Comments

2. Response to Comments, Draft Alternative Screening Report, AOC 41 (February 1996).	Groups 2&7	41

4.6 Feasibility Study Reports

Reports

1. Final Feasibility Study Report Cold Spring Brook Landfill Operable Unit, Fort Devens Feasibility Study for Group 1A Sites (December 1994).	Group 1A	40
2. Draft Consolidation Landfill Feasibility Study Report, Fort Devens, Massachusetts (Sept. 1995)	Groups 2&7	6, 9, 11, 12 13, 40, 41
3. Revised Landfill Remediation Feasibility Study Report, Devens Reserve Forces Training Area, Devens, Massachusetts, Vols. I and II (January 1997).	Groups 2&7	6, 9, 11, 12 13, 40, 41
4. Landfill Remediation Feasibility Study Report, Transmittal of Revised Report Sections and RCLs, Devens, MA (March 28, 1997).	Groups 2&7	6, 9, 11, 12 13, 40, 41
5. Landfill Remediation, Feasibility Study Addendum Report, Devens, MA (November 1998).	Groups 2&7	6, 9, 11, 12 13, 40, 41

Comments

6. USEPA New England Comments on the Final Feasibility Study Report for the Cold Spring Brook Operable Unit (February 8, 1995).	Group 1A	40
7. MADEP Comments on the December 1994 "Final Feasibility Study Report, Cold Spring Brook Landfill Operable Unit, Fort Devens Feasibility Study for Group 1A Sites." (ABB Environmental Services, Inc.) (February 23, 1995).	Group 1A	40
8. Comments Dated March 7, 1997, by MADEP, on the "Landfill Remediation Feasibility Study, Devens Reserve Forces Training Area, Devens, Massachusetts", ABB Environmental Services, Inc., January 1997 (March 7, 1997).	Groups 2&7	6, 9, 11, 12 13, 40, 41

Response to Comments

9. Response to Comments Dated March 6, 1997 by USEPA, and to Comments Dated March 7, 1997 by MADEP, on the Landfill Remediation Feasibility Study, Devens Reserve Forces Training Area, Devens, Massachusetts, ABB Environmental Services, January 1997 (March 1997).	Groups 2&7	6, 9, 11, 12 13, 40, 41

	10. Response to Comments Dated February 5, 1997, by D. Howlett, FORSCOM, on the Landfill Remediation Feasibility Study, Devens, Massachusetts (March 1997).	Groups 2&7	6, 9, 11, 12, 13, 40, 41
	11. Response to Comments Dated February 21, 1997, by the U.S. Army Corps of Engineers, Omaha, on the Landfill Remediation Feasibility Study, Devens, Massachusetts (March 1997).	Groups 2&7	6, 9, 11, 12, 13, 40, 41
	12. ABB-ESs Response to Comments on the Landfill Remediation Feasibility Study (March 28, 1997).	Groups 2&7	11, 12, 13, 40, 41
4.7	Work Plans and Progress Reports		
	Reports		
	1. Final Feasibility Study Work Plan (August 1992).	Group 1A	40
	2. Final Data Gap Activity Work Plan (March 31, 1993).	Group 1A	40
	3. Progress Report; Final Proposed Plan/Draft Record of Decision for Landfill Remediation, Areas of Contamination (AOCs) 9, 11, 40 & 41, Study Areas (SAs) 6, 12, & 13 (June 8, 1998).	Groups 2&7	11, 12, 13 40, 41
	Comments		
	4. Comments on the March 18, 1994 "Draft Feasibility Study Cold Spring Brook Landfill Operable Unit," ABB Environmental Services, Inc. (May 5, 1994).	Group 1A	40
	5. Cross Reference: Comments Dated July 6, 1994 from D. Lynne Welsh, Commonwealth of Massachusetts Department of Environmental Protection the May 1994 "Draft Task Order Work Plan Area of Contamination (AOC) 41, AOC 43G and 43J, Fort Devens, Draft Remedial I (July 6, 1994).	Groups 2&7	41
4.9	Proposed Plans for Selected Remedial Action		
	Reports		
	1. Progress Report; Final Proposed Plan/Draft Record of Decision for Landfill Remediation, Areas of Contamination (AOCs) 9, 11, 40 & 41, Study Areas (SAs) 6, 12, & 13 (March 1996).	Groups 2&7	11, 12, 13, 40, 41
	2. Preliminary Final Proposed Plan for SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41, ABB-ES, (October, 1997).	Groups 2&7	11, 12, 13, 40, 41

3. Proposed Plan for Sas 6, 12, and 13, and AOCs 9, 11, 40, and 41, U.S. Army, Reserve Forces Training Area, Devens, MA (December 1997).	Groups 2&7	11, 12, 13, 40, 41
4. Request for Extension from DOA on the Final Proposed Plan/Draft Record of Decision for Landfill Remediation, AOCs 9, 11, 40 & 4 1, SAs 6, 12 & 13 (April 7, 1998).	Groups 2&7	6, 9, 11, 12, 13, 40, 41
5. Proposed Plan for SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41, U.S. Army, Reserve Forces Training Area, Devens, Massachusetts (November 1998).	Groups 2&7	11, 12, 13, 40, 41
Comments		
6. MADEP Comments on the Proposed Plan for SAs 6, 12 & 13, AOCs 9, 11, 40 & 41 (December 1997) (February 23, 1998).	Groups 2&7	11, 12, 13, 40, 41
7. MADEP Supplemental Comments on the Proposed Plan for SAs 6, 12, and 13 and AOCs 9, 11, 40 and 41 (February 23, 1998).	Groups 2&7	11, 12, 13, 40, 41
8. MADEP Comments on the Proposed Plan for SAs 6, 12, and 13, and AOCs 9, 11, 40, and 41, US Army Reserve Forces Training Area, Devens, MA (November 1998) (January 8, 1999).	Groups 2&7	11, 12, 13, 40, 41
Response to Comments		
9. USEPA Rebuttal to (lack of) Comments for Section VII of the Fort Devens Federal Facility Agreement (July 23, 1997).	Groups 2&7	11, 12, 13, 40, 41
10. Response to Comments on Landfill Remediation Proposed Plan, Devens Reserve Training Area, Devens, MA (August 1, 1997).	Groups 2&7	11, 12, 13, 40, 41

5.0 Record of Decision (ROD)

5.1 Correspondence

Letter

1. Letter from USEPA on the Inclusion of AOC 41 in the South Post Impact Area ROD (April 30, 1996).	Group 1B	41

5.4 Record of Decision (ROD)

Reports

1. Final Record of Decision for the South Post Impact Area and Area of Contamination 41 Groundwater and Areas of Contamination 25, 26, and 27 (July 1996).	Group 1B	41
2. No Further Action Decision Under CERCLA for Study Area 09 (SA 09) North Post Landfill (December 1993).	Groups 3,5&6	9
3. No Further Action Decision Briefing Study Area (SA) 09 – North Post Landfill, SA 30 - Moore Army Airfield Drum Storage Area, and SA 47 - Moore Army Airfield Underground Storage Tanks (December 1993).	Groups 3,5&6	9

Comments

6. MADEP Comments on the May 1994 "Draft No Further Action Decision Documents Under CERCLA, Study Areas 12, 13, 14, 43B, and 43N", Groups 2 & 7 and Historic Gas Stations (June 29, 1994).	Groups 2&7	13
7. Comments on the December 1993 "Final No Further Action Decision Under CERCLA, Fort Devens Study Area 09, North Post Landfill," ABB Environmental Services, Inc. (February 7, 1994).	Groups 3,5&6	9
8. USEPA Comments on the Draft Record of Decision for Landfill Remediation	Groups 2&7	6, 9, 11, 12, 13, 40, 41

Response to Comments

9. Responses on the following document: Draft No Further Action Decision Under CERCLA SA 09 - North Post Landfill, SA 30 - Moore Army Airfield Drum Storage Area and SA 47 - Moore Army Airfield Lust Site, Fort Devens, Massachusetts (January 1995).	Groups 3,5&6	9

7.0 Remedial Action (RA)

7.6 Work Plans and Progress Reports

Reports

1. Ecological Sampling Work Plan, South Post Impact Area, Devens, MA. (October 1998).	Group 1B	41

2. Final Ecological Sampling Work Plan and Response to Comments on Draft Ecological Sampling Work Plan, South Post Impact Area	Group 1B	41
Comments		
3. Comments Dated February 19, 1997 from James P. Byrne, USEPA Region I, on the "Draft Monitoring Well Installation Work Plan," "Draft Site Safety and Health Plan," and "Draft Long Term Monitoring Plan," Stone & Webster Environmental Technology & Services (February 19, 1997).	Group 1B	41
4. Comments Dated May 21, 1997 from James P. Byrne, USEPA Region I, on the "Final Long Term Monitoring Plan, South Post Impact Area," and the "Final Well Installation Work Plan, South Post Impact Area," Stone & Webster Environmental Technology & Services (May 21, 1997).	Group 1B	41
5. MADEP Comments on the 1997 Groundwater Analytical Report for the South Post Impact Area Long Term Monitoring (ACOE, February 1998) (March 18,1998).	Group 1B	41
6. MADEP comments on the Ecological Sampling Work Plan, South Post Impact Area, Devens, MA (Oct. 98, Stone & Webster) (November 5, 1998).	Group 1B	41
7. USEPA Comments on the Ecological Sampling Work Plan, South Post Impact Area, Operable Units AOCs 25, 26, 27 and 41 Groundwater (January 8, 1999).	Group 1B	41
Response to Comments		
8. Responses Dated May 13, 1997 from Stone & Webster Environmental Technology & Services, to Comments Dated February 19, 1997 from USEPA Region I and Comments Dated January 6, 1997 from MADEP on the "Draft Long Term Monitoring Plan, South Post Impact Area," (February 19, 1997).	Group 1B	41
8.0 Site Closeout		
8.3 Operations and Maintenance		
Reports		
1. Conceptual Long Term Monitoring Plan, South Post Impact Area, Fort Devens, Massachusetts (April 1996).	Group 1B	41

8.5 Contractor Work Plans and Progress Reports

Reports

1. Final Well Installation Work Plan, South Post Impact Area (May 1997).	Group 1B	41
2. Final Long-term Monitoring Plan, South Post Impact Area (May 1997).	Group 1B	41
3. Annual Report - 1997 for the South Post Impact Area Long Term Monitoring, Devens, MA (August 14, 1998).	Group 1B	41

Comments

4. Comments Dated April 18, 1997 from James P. Byrne, USEPA Region I, on the April 5, 1997 Draft Response to Comments on the "Long Term Monitoring Plan, South Post Impact Area," Stone & Webster Environmental Technology & Services (April 18, 1997).	Group 1B	41
5. MADEP Comments on the Annual Report - 1997, South Post Impact Area Long Term Monitoring, Devens, MA (ACOE, August 1998) (September 25, 1998).	Group 1B	41

17.0 Site Management Records

17.6 Site Management Plans

Reports

1. Final Integrated Natural Resources Management Plan 1998-1002, Devens Reserve Forces Training Area (April 1999).	Group 1B	41

Comments

2. USEPA New England Comments on the Integrated Natural Resources Management Plan 1998-2002 (December 5, 1997).	Group 1B	41
3. MADEP Comments on the Integrated Natural Resources Management Plan 1998-2002 (December 15, 1997).	Group 1B	41

Response to Comments

4. Response to Comments from James P. Byrne, EPA Region I on the November 1991 "Final Quality Assurance Project Plan," Ecology and Environment, Inc. (1991).	Group 1A	40

Section II

Guidance Documents

Guidance Documents

The following guidance documents were relied upon during site investigations and evaluation of cleanup options at the Devens RFTA. These documents may be reviewed, by appointment only, at the Base Realignment and Closure (BRAC) Office at 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 for 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. Office of Emergency and Remedial Response. Interim Final Guidance for Conducting Remedial Investigations and Feasibility Studies Under CERCLA, (OWSER Directive 9355.3-01, EPA/540/3-89/004), 1986.
9. U.S. Environmental Protection Agency. Test Methods for Evaluating Solid Waste: EPA SW-846 Third Edition, September 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/540/1-89/002), 1989.
11. U.S. Environmental Protection Agency. Hazardous Waste Management System; Identification and Listing of Hazardous Waste; Toxicity Characteristics Revisions, (Final Rule, 40 CFR Part 261 et al., Federal Register Part V), June 29, 1990.
12. U.S. Environmental Protection Agency. Office of Solid Waste and Emergency Response. Application of the CERCLA Municipal Landfill Presumptive Remedy to Military Landfills, Directive No. 9355.0-67FS, EPA/540/F-96/020, December 1996.

APPENDIX E - DECLARATION OF STATE CONCURRENCE

COMMONWEALTH OF MASSACHUSETTS
EXECUTIVE OFFICE OF ENVIRONMENTAL AFFAIRS
DEPARTMENT OF ENVIRONMENTAL PROTECTION
Central Regional Office, 627 Main Street, Worcester, MA 01608

ARGEO PAUL CELLUCCI
Governor

JANE SWIFT
Lieutenant Governor

BOB DURAND
Secretary

LAUREN A. LISS
Commissioner

July 15, 1999

Mr. John DeVillars
Regional Administrator
U.S. Environmental Protection Agency
JFK Federal Building
Boston, MA 02203

RE: Final Record of Decision, Landfill Remediation, Study Areas 6, 12 and 13 and Areas of Contamination 9, 11, 40 and 41, US Army Reserve Forces Training Area, Devens, Massachusetts (July 1999)

Dear Mr. DeVillars,

The Massachusetts Department of Environmental Protection (MADEP) has reviewed the Record of Decision (ROD) proposed by the United States Army for the Devens historical landfills; Study Areas (SA) 6, 12 and 13 and Areas of Contamination (AOC) 9, 11, 40 and 41. The MADEP has worked closely with the U.S. Army and the U.S. Environmental Protection Agency and is pleased to concur with the Army's selected remedial action for the sites.

This is our second concurrence letter regarding the remediation of the historical landfills and replaces the letter of June 22, 1999. This new concurrence letter is precipitated by the Army's publication of change pages to the May 1999 ROD which deleted all references to the phrase "non-CERCLA" used to preface actions on SAs 6 and 12 and AOC 41. The omission of this term has not changed the scope of the cleanup or the Army's responsibilities in regards to the implementation of the remedy.

As previously mentioned, the remedy is the culmination of a long effort to resolve solid waste issues involving 270,000 cubic yards of solid waste present in seven Devens historic landfills. The selected remedial alternative in the ROD is unique in that it holds out two technically equivalent options for landfill debris disposal. The Army is proposing to excavate and relocate debris from four of the landfills to either a new landfill to be constructed on Devens or relocation of the material to an off-site commercial landfill. A decision on the final disposal site will be based on the best value to the Army.

This information is available in alternate format by calling our ADA Coordinator at (617) 574-6872.

Key actions detailed in the ROD include:

SA 6
No action.

SA 12, AOC 41

- Surface debris monitoring
- Known hot spot removal
- Backfilling/regrading/revegetation
- Site monitoring

AOC 9, AOC 11, SA 13, AOC 40

- AOC 40 sediment removal with disposal either in the Consolidation Landfill or offsite
- AOC 40 drum removal with disposal either in the Consolidation Landfill or offsite
- Debris excavation, backfill and regrading
- Wetlands restoration at AOC 9, AOC 11, and AOC 40
- Consolidation of excavated debris at onsite Consolidation Landfill or transport to an offsite landfill
- Cover system monitoring/maintenance and groundwater monitoring at Consolidation Landfill
- Institutional controls and five year site reviews at those sites where unrestricted future use is not achievable or economical

The MADEP has worked closely with the Army, EPA and the public for the past five years in the development of a remedy for the historical Devens landfills. Our concurrence with the remedial alternative is based on this involvement as well as the remedy's compliance with Applicable or Relevant and Appropriate Requirements (ARAR) and it's overall protectiveness of human health and the environment. We greatly appreciate the Army's willingness to incorporate public interests in the development of remedial options for the landfills as well as the EPA's creativity in crafting a multiple option ROD for the sites. We look forward to continuing to work with the EPA and the Army in the implementation of the remedy.

Sincerely,

Robert W. Golledge Jr.
Regional Director
Central Regional Office

cc: Informational Repositories
Fort Devens Mailing List
Jim Byrne, EPA
Jim Chambers, BRAC
Patricia Plante, HLA
Mark Applebee, ACOE

APPENDIX F – SUMMARY OF HUMAN HEALTH AND ECOLOGICAL RISK INFORMATION

APPENDIX F.1 – RISK SUMMARY INFORMATION TABLES (AOC 9, AOC 11, SA 12, SA 13, AOC 40, AOC 41)
APPENDIX F.2 – RISK ASSESSMENT SUMMARY TABLES (AOC 11 AND AOC 40)
APPENDIX F.3 – PRELIMINARY RISK EVALUATION TABLES (AOC 9, SA 12, SA 13 AND AOC 41)

APPENDIX F.1 – RISK SUMMARY INFORMATION TABLES (AOC 9, AOC 11, SA 12, SA 13, AOC 40, AOC 41)

AOC 9
Summary of Human Health Risk Information
Devens, MA

Analyte	No of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/g)	Average Concentration (µg/g)	Background Concentration (µg/g)	Screening Health Standard (Region III RBC) (µg/g)	Site Specific Health Standard (MCP S-2) (µg/g)	No of Sample Locations where Site Specific Health Standard is Exceeded
Surface Soil								
Arsenic	2	2/2	20	19	21	0.97[1]	30	0
Sediment								
Arsenic	3	3/3	14	7.6	NA	0.97[1]	30	0
Subsurface Soil								
Arsenic	3	7/7	21	16	21	1.6[2]	30	0
Beryllium	3	3/7	1	0.64	0.347	0.67[2]	0.8	3
Benzo(a)anthracene	3	3/7	40	7.04	NA	2.7[2]	0.7	3
Benzo(a)pyrene	3	2/7	40	7.48	NA	0.39[2]	0.7	2
Benzo(a)fluoranthene	3	2/7	40	7.4	NA	3.2[2]	0.7	2
Benzo(g,h,i)perylene	3	2/7	20	4.34	NA	18[2]	30	0
Benzo(k)fluoranthene	3	3/7	30	4.9	NA	7.4[2]	0.7	3
Indeno(1,2,3-cd)pyrene	3	2/7	20	4.54	NA	1.4[2]	0.7	2

1. Region III Residential Soil Risk Based Concentration (RBC)
2. Region III Commercial/Industrial Soil RBC

This table is a summary of the Preliminary Risk Evaluation presented in the January 1996 Final SI Report.
(µg/g) = micrograms per gram
MCP = Massachusetts Contingency Plan

AOC 9
Summary of Human Health Risk Information
Devens, MA

Analyte	No of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/L)	Average Concentration (µg/L)	Background Concentration (µg/L)	MCL (µg/L)	Massachusetts Drinking Water Standards (µg/L)	Region III Tap Water Standard (µg/L)	MCP GW-3 (µg/L)
Groundwater									
Aluminum	5[1]	10/10	70400	20000	6870	50-200	50-200	37000	NA
Arsenic	5[1]	10/10	220	78.76	10.5	50	50	0.045	400
Chromium (total)	5[1]	9/10	1040	155	14.7	100	100	37000	2000
Cobalt	5[1]	5/10	93.7	35.2	25	NA	NA	2200	NA
Iron	5[1]	10/10	90000	32767	9100	300	300	11000	NA
Lead	5[1]	10/10	81.3	25.5	4.25	15	15	NA	30
Manganese	5[1]	10/10	3270	1144	291	50	50	840	NA
Nickel	5[1]	6/10	369	104	34.3	100	100	730	80
Surface Water									
Bis(2-ethylhexyl)phthalate	3	1/3	6.8	3.87	NA	6	NA	NA	30
Iron	3	3/3	5460	3133	NA	300	300	11000	NA

1. Two rounds sampled for each well

This table is a summary of the Preliminary Risk Evaluation data presented in the January 1996 Final SI Report.

(µg/L) = micrograms per liter

MCP = Massachusetts Contingency Plan

MCL = maximum contaminant level

AOC 9
Summary of Ecological Risk Information
Devens, MA

Analyte	No of Different Locations Sampled	Frequency of Detections	Maximum Concentration (µg/g)	Average Concentration (µg/g)	Background Concentration (µg/g)	Ecological Benchmark (µg/g)	Number of Sample Locations Where Ecological Benchmark is Exceeded
Surface Soil							
Lead	2	2/2	81	44	34.4	48.4	1
Sediment							
Arsenic	3	3/3	14	7.6	NA	5	2
Lead	3	3/3	46	27	NA	27	1

This table is a summary of the ecological risk data as reported in the January 1996 Revised Final Site Investigation Report, Data Item A009.
Ecological Benchmark is a combination of State and Federal Standards and guidance values intended to be protective of aquatic and semi-terrestrial receptors.
The ecological benchmarks for sediment analytes were derived as the lowest of available criteria and other guidance values. These values were used for the purpose of eliminating areas and/or analytes that do not represent an ecological risk. Conversely, the exceedance of these conservative screening values does not necessarily imply that ecological impacts will occur, because they are not based on the site-specific attributes that determine exposure and toxilogical response (e.g., sensitivity of resident organisms).
µg/g = microorganisms per gram

AOC 9
Summary of Ecological Risk Information
Devens, MA

Analyte	No of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/L)	Average Concentration (µg/L)	Background Concentration (µg/L)	MCL (µg/L)	Massachusetts Drinking Water Standards (µg/L)	Ecological Benchmark (µg/L)	Number of Sample Locations Where Ecological Benchmark is Exceeded
Surface Water									
Aluminum	3	1/3	123	123	733	50-200	50-200	87	1
Iron	3	3/3	5460	3133	1630	300	300	1000	3
Lead	3	3/3	2.3	2.3	8.68	15	15	1.4	3

This table is a summary of the ecological risk data as reported in the January 1996 Revised Final Site Investigation Report, Data Item A009.
Ecological Benchmark is a combination of State and Federal Standards and guidance values intended to be protective of aquatic and semi-terrestrial receptors.
(µg/L) = micrograms per liter
MCL = maximum contaminant level

SA 12
Summary of Human Health Risk Information
Devens, MA

Analyte	No of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/g)	Average Concentration (µg/g)	Background Concentration (µg/g)	Screening Health Standard (Region III RBC) (µg/g)	Site Specific Health Standard (MCP S-2) (µg/g)	No of Sample Locations where Site Specific Health Standard is Exceeded
Surface Soil								
Arsenic	8	9/9	21	10	21	0.36	30	0
Beryllium	8	3/9	0.74	0.5	0.347	0.15	0.8	0
Lead	8	9/9	880	121.9	48.4	500	600	1
Benzo(b)fluoranthene	8	1/9	1	0.22	NA	0.87	0.7	1
Chrysene	8	1/9	0.8	0.17	NA	0.7	0.7	1
Aroclor-1254	8	1/9	6.9	0.84	NA	0.0083	2	1
TPH	8	4/9	1350	177	NA	500	500	1
Sediment								
Arsenic	6	6/6	22	15.83	NA	0.36	30	0
Beryllium	6	3/6	1.58	0.74	NA	0.15	0.8	3
Manganese	6	6/6	553	288	NA	390	NA	NA

This table is a summary of the Preliminary Risk Evaluation data presented in the October 1995 SI Report.
(µg/g) = micrograms per gram
RBC = risk based concentrations
MCP = Massachusetts Contingency Plan

SA 12
Summary of Human Health Risk Information
Devens, MA

Analyte	No of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/L)	Average Concentration (µg/L)	Background Concentration (µg/L)	MCL (µg/L)	Massachusetts Drinking Water Standards (µg/L)	Region III Tap Water Standard (µg/L)	MCP GW-3 (µg/L)
Groundwater									
Bis(2-ethythexl)phthalate	5	1/6	9.1	3.52	NA	6	NA	NA	30
Aluminum	5	6/6	25200	10486	6870	50-200	50-200	37000	NA
Antimony	5	1/6	6.96	2.41	3.03	6	6	15	300
Beryllium	5	1/6	6.63	3.12	5	4	4	0.016	50
Cadmium	5	1/6	12.1	3.68	4.01	5	5	18	10
Iron	5	6/6	40200	16843	9100	300	300	11000	NA
Lead	5	6/6	500	125.8	4.25	15	15	NA	30
Manganese	5	6/6	990	281.7	291	50	50	840	NA

This table is a summary of the Preliminary Risk Evaluation data presented in the October 1995 SI Report.

(µg/L) = micrograms per liter

MCP = Massachusetts Contingency Plan

MCL = maximum contaminant level

SA 12
Summary of Ecological Risk Information
Devens, MA

Analyte	Number of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/g)	Average Concentration (µg/g)	Background Concentration (µg/g)	Ecological Benchmark (µg/g)	Number of Sample Locations Where Ecological Benchmark is Exceeded
Surface Soil							
Barium	9	9/9	165	45.5	42.5	42.5	2
Lead	9	9/9	880	122	48.4	48.4	3
Zinc	9	9/9	736	119	35.5	640	1
Arochlor-1254	9	1/9	6.9	0.80	NA	3.1	1
Sediment[1]							
Soil PCL's							
Aluminum	6	6/6	26300	16167	NA	15000	2
Barlum	6	6/6	158	93.2	NA	42.5	6
Beryllium	6	3/6	1.58	0.65	NA	0.88	3
Cadmium	6	4/6	2.79	0.38	NA	2	3
Copper	6	6/6	39	31.7	NA	28	4
Lead	6	6/6	96	64.7	NA	48.4	4
Nickel	6	6/6	43.9	25.7	NA	35	2
Vanadium	6	6/6	60.2	33.7	NA	28.7	3
Sediment PCL's							
Heptachlor	6	1/6	0.02	0.0048	NA	0.003	1
4,4'-DDT	6	2/6	0.028	0.008	NA	0.022	1
4,4'-DDD	6	4/6	0.087	0.027	NA	0.022	3
4,4'-DDE	6	2/6	0.041	0.013	NA	0.022	1
Arsenic	6	6/6	22	15.8	NA	5	6
Cadmium	6	4/6	2.79	1.55	NA	0.8	4
Chromium	6	6/6	62.6	47.7	NA	26	6
Copper	6	6/6	39	31.7	NA	19	6
Iron	6	6/6	37800	21467	NA	24000	2
Lead	6	6/6	96	64.7	NA	27	6
Manganese	6	6/6	553	288	NA	428	1
Mercury	6	6/6	0.829	0.407	NA	0.11	6
Nickel	6	6/6	43.9	25.7	NA	22	3
Zinc	6	6/6	135	103	NA	85	5

1. Sediment samples were considered sediment/surface soil for purposes of ecological PRE and were compared to both sediment and surface soil protective contaminant levels (PCL's).
This table is a summary of the ecological risk data as reported In the January 1996 Revised Final Site Investigation Report, Data Item A009.
Ecological Benchmark is a combination of State and Federal Standards and guidance values intended to be protective of aquatic and semi-terrestrial receptors.
The ecological benchmarks for sediment analytes were derived as the lowest of available criteria and other guidance values. These values were used for the purpose of eliminating areas and/or analytes that do not represent an ecological risk. Conversely, the exceedance of these conservative screening values does not necessarily imply that ecological impacts will occur, because they are not based on the site-specific attributes that determine exposure and toxicological response (e.g., sensitivity of resident organisms).
µg/g = micrograms per gram

SA 13
Summary of Human Health Risk Information
Devens, MA

Analyte	No of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/g)	Average Concentration (µg/g)	Background Concentration (µg/g)	Screening Health Standard (Region III RBC) (µg/g)	Site Specific Health Standard (MCP S-2) (µg/g)	No of Sample Locations where Site Specific Health Standard is Exceeded
Surface Soil								
Arsenic	4	4/4	38	17.4	21	0.97	30	1
Beryllium	4	2/4	1.18	0.59	0.347	0.4	0.8	1
Benzo(a)anthracene	4	1/4	3	0.83	NA	1.6	1	1
Benzo(a)pyrene	4	1/4	2	0.63	NA	0.23	0.7	1
Benzo(b)fluoranthene	4	1/4	4	1.1	NA	1.9	1	1
Indeno(1,2,3-cd)pyrene	4	1/4	1	0.47	NA	0.84	1	0
Sediment								
Arsenic	3	3/3	22	9.8	NA	0.97	30	0
Beryllium	3	1/3	2.52	1.01	NA	0.4	0.8	1

This table is a summary of the Preliminary Risk Evaluation data presented in the October 1995 SI Report.
(µ/g) = micrograms per gram
RBC = risk based concentrations
MCP = Massachusetts Contingency Plan

SA 13
Summary of Human Health Risk Information
Devens, MA

Analyte	No of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/L)	Average Concentration (µg/L)	Background Concentration (µg/L)	MCL (µg/L)	Massachusetts Drinking Water Standards (µg/L)	Region III Tap Water Standard (µg/L)	MCP GW-3 (µg/L)
Groundwater									
Aluminum	6	6/6	17400	7118	6870	50-200	50-200	37000	NA
Iron	6	6/6	26400	11358	9100	300	300	11000	NA
Lead	6	6/6	17.7	8.8	4.25	15	15	NA	30
Manganese	6	6/6	798	390	291	50	50	840	NA
Bis(2-ethylhexl)phthalate	6	2/6	31	7.2	NA	6	NA	NA	30
Surface Water									
Aluminum	4	4/4	5060	3470	NA	50-200	50-200	37000	NA
Iron	4	4/4	3610	3115	NA	300	300	11000	NA
Lead	4	4/4	18.9	10.5	NA	15	15	NA	30
Manganese	4	4/4	1020	743	NA	50	50	840	NA
Bis(2-ethylhexl)phthalate	4	1/4	6.9	3.5	NA	6	NA	NA	30
Nitroglycerine	4	1/4	38.5	13.4	NA	NA	NA	NA	NA

This table is a summary of the Preliminary Risk Evaluation data presented in the October 1995 SI Report.
(µg/L) = micrograms per liter
MCP = Massachusetts Contingency Plan
MCL = maximum contaminant level

SA 13
Summary of Ecological Risk Information
Devens, MA

Analyte	Number of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/g)	Average Concentration (µg/g)	Background Concentration (µg/g)	Ecological Benchmark (µg/g)	Number of Sample Locations Where Ecological Benchmark is Exceeded
Surface Soil							
Arsenic	4	4/4	38	17.4	21	33	1
Barium	4	4/4	52.2	38.3	42.5	42.5	2
Beryllium	4	2/4	1.18	0.45	0.347	0.88	1
Cadmium	4	1/4	2.08	0.78	2	2	1
Lead	4	4/4	330	102.6	48.4	48.4	2
Selenium	4	1/4	0.9	0.32	NA	0.48	1
Sediment							
4,4'-DDE	3	2/3	0.059	0.024	NA	0.0274	1
Gramma-chlordane	3	3/3	0.049	0.03	NA	0.0002	3
Heptachlor	3	3/3	0.07	0.05	NA	0.00364	3
Arsenic	3	3/3	22	9.8	NA	5	1
Copper	3	3/3	25.9	11.2	NA	19	1
Lead	3	3/3	41	19.7	NA	27	1

This table is a summary of the ecological risk data as reported in the January 1996 Revised Final Site Investigation Report, Data Item A009.
Ecological Benchmark is a combination of State and Federal Standards and guidance values intended to be protective of aquatic and semi-terrestrial receptors.
The ecological benchmarks for sediment analytes were derived as the lowest of available criteria and other guidance values. These values were used for the purpose of eliminating areas and/or analytes that do not represent an ecological risk. Conversely, the exceedance of these conservative screening values does not necessarily imply that ecological impacts will occur, because they are not based on the site-specific attributes that determine exposure and toxicological response (e.g., sensitivity of resident organisms).
µg/g = micrograms per gram

SA 13
Summary of Ecological Risk Information
Devens, MA

Analyte	Number of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/L)	Average Concentration (µg/L)	Background Concentration (µg/L)	Ecological Benchmark (µg/L)	Number of Sample Locations Where Ecological Benchmark is Exceeded
Surface Water							
Aluminum	4	4/4	5060	3470	733	87	4
Iron	4	4/4	3610	3115	1630	1000	4
Lead	4	4/4	18.9	10.5	8.68	6.61	3
Mercury	4	2/4	1.25	0.66	24	0.012	2

This table is a summary of the ecological risk data as reported in the January 1996 Revised Final Site Investigation Report, Data Item A009.
Ecological Benchmark is a combination of State and Federal Standards and guidance values intended to be protective of aquatic and semi-terrestrial receptors.
µg/L = micrograms per liter

APPENDIX F.2 – RISK ASSESSMENT SUMMARY TABLES (AOC 11 AND AOC 40)

AOC 11
Summary of Human Health Risk Information
Devens, MA

Analyte	No of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/g)	Average Concentration (µg/g)	Background Concentration (µg/g)	Screening Health Standard (Region III RBC) (µg/g)	Site Specific Health Standard (MCP S-2) (µg/g)	No of Sample Locations where Site Specific Health Standard is Exceeded
Surface Soil								
Benzo(a)anthracene	16	4/16	12	2.3	NA	0.88	1	7
Benzo(a)pyrene	16	4/16	8.3	1.2	NA	0.088	0.7	4
Benzo(b)fluoranthene	16	13/16	12.0	2.7	NA	0.88	1	9
Dibenzo(a,h)anthracene	16	1/16	0.670	0.042	NA	0.088	0.7	0
Phenanthrene	16	14/16	11	1.8	NA	NA	100	0
4,4' - DDT	16	15/16	8	1.4	5.60	1.9	2	2
Chlordane	16	3/16	0.279	0.032	0.136	1.8	2	0
Arsenic	16	16/16	22.9	13.7	19.0	0.43	30	0
Cadmium	16	3/16	4.5	0.6	1.28	39	80	0
Chromium	16	16/16	78.1	24.2	33.0	78000	2500	0
Manganese	16	16/16	407	193	380	1800	NA	NA
Mercury	16	14/16	6.5	1.2	0.11	23	60	0
Vanadium	16	16/16	27.4	16.1	32.3	550	2000	0
Sediment								
Benzo(a)anthracene	15	8/15	1.8	0.43	0.32	0.88	1	2
Benzo(b)fluoranthene	15	1/15	2.5	0.17	NA	0.88	1	1
Bis(2-ethylhexyl)phthalate	15	5/15	70.0	5.3	1.60	46	300	0
PCB - 1016	15	2/15	1.08	0.11	NA	5.5	NA	NA
PCB - 1254	15	3/15	0.837	0.11	NA	1.6	NA	NA
PCB - 1260	15	2/15	1.18	0.10	NA	NA	NA	NA
Antimony	15	1/15	163	10.9	NA	31	40	1
Arsenic	15	11/15	61.1	18.1	3.06	0.43	30	4
Beryllium	15	1/15	1.96	0.13	NA	0.15	0.8	1
Cadmium	15	13/15	303	41.2	117	39	80	1
Chromium	15	15/15	435	111	102	78000	2500	0
Manganese	15	12/15	512	147	142	1800	NA	NA
Mercury	15	15/15	11.0	2.7	2.52	23	60	0
Vanadium	15	15/15	69.2	28.8	44.5	550	2000	0
Zinc	15	15/15	2155	563	716	23000	2500	0
Subsurface Soil								
Arsenic	13	25/26	230	26.4	NA	0.43	30	3
Barium	13	26/26	205	56.1	NA	5500	2500	0
Beryllium	13	1/26	0.828	0.032	NA	0.15	0.8	1
Copper	13	21/26	3300	140	NA	270000	NA	NA
Iron	13	26/26	43200	15000	NA	23000	NA	NA
Dieldrin	13	10/26	0.0580	0.011	NA	0.04	0.04	2
DDT	13	19/26	2.80	0.7	NA	1.9	2	2
Benzo(a)anthracene	13	13/26	6.00	1.5	NA	0.88	1	9
Benzo(b)fluoranthene	13	5/26	5.60	0.61	NA	0.88	1	5

AOC 11
Summary of Human Health Risk Information
Devens, MA

Analyte	No of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/L)	Average Concentration (µg/L)	Background Concentration (µg/L)	MCL (µg/L)	Massachusetts Drinking Water Standards (µg/L)	Region III Tap Water Standard (µg/L)	MCP GW-3 (µg/L)
Groundwater[1]									
Arsenic	5	8/10	260	81.1	NA	50	50	0.045	400
Beryllium	5	4/10	6.14	1.5	NA	4	4	0.016	50
Iron	5	10/10	56900	18000	NA	300	300	11000	NA
Manganese	5	10/10	6090	1800	NA	50	50	840	NA
Bis(2-ethylhexl)phthalate	5	1/10	25	2.5	NA	6	NA	4.8	30
Surface Water									
Bis(2-ethylhexyl)phthalate	15	3/15	73.0	8.7	NA	6	NA	4.8	30
Antimony	15	3/15	155	20.7	NA	6	6	15	300
Arsenic	15	11/15	75.6	17.5	12.1	50	50	0.045	400
Barium	15	15/15	2730	270	360	2000	2000	2600	30000
Beryllium	15	7/15	7.77	1.64	NA	4	4	0.016	50
Cadmium	15	6/15	147	22.9	42.8	5	5	18	10
Chromium	15	7/15	301	50.2	66.2	100	100	37000	2000
Manganese	15	15/15	2090	527	255	50	50	840	NA
Silver	15	3/15	78.7	8.46	NA	100	100	180	7
Vanadium	15	4/15	127	18.9	43.9	NA	NA	260	2000
Zinc	15	10/15	12000	1500	392	55	5000	11000	900

1.5 wells sampled in 2 rounds.
This table is a summary of the Human Health Risk Assessment presented in the April 1995 Draft RI Report.
(µg/g) = micrograms per gram
(µg/L) = micrograms per liter
RBC = risk based concentrations
MCP = Massachusetts Contingency Plan
MCL = maximum contaminant level

AOC 11
Summary of Ecological Risk Information
Devens, MA

Analyte	Number of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/g)	Average Concentration (µg/g)	Background Concentration (µg/g)	Screening Criteria (µg/g)	Number of Sample Locations Where Ecological Benchmark is Exceeded
Surface Soils							
Barium	16	16/16	131	43.3	54	41	3
Cadmium	16	3/16	4.5	1.08	1.28	0.44	3
Copper	16	16/16	49.8	18.9	13.5	28	3
Iron	16	16/16	18300	14200	18000	NA	NA
Calcium	16	16/16	3900	2140	810	NA	NA
Lead	16	16/16	2000	482	48	4	16
Mercury	16	14/16	6.5	1	0.11	3.6	1
Isodrin	16	1/16	0.00616	0.00179	NA	NA	NA
ppDDT	16	15/16	8	1.03	5.6	1.07	5
Benzo (a) anthracene	16	14/16	12	2.25	NA	8.9	1
Benzo (a) pyrene	16	4/16	8.3	1.71	NA	5.5	1
1,1,1-Trichloroethane	16	3/16	0.36	0.133	NA	NA	NA
Total Petroleum Hydrocarbons	16	14/16	1400	771	NA	NA	NA
Wetland Soils (Northern and Southern Sediments)							
Aluminum	10	10/10	22400	14260	NA	1700	10
Arsenic	10	9/10	61.1	21.7	NA	5	8
Calcium	10	10/10	14900	9940	NA	NA	NA
Chromium	10	10/10	171	88	NA	26	10
Copper	10	10/10	296	117	NA	16	10
Iron	10	10/10	94200	26100	NA	2000	10
Lead	10	10/10	930	337	NA	4	10
Magnesium	10	10/10	3050	2135	NA	NA	NA
Mercury	10	10/10	3.4	2.04	NA	0.11	10
Nickel	10	6/10	28.5	13.9	NA	16	5
Potassium	10	5/10	1530	595	NA	NA	NA
Selenium	10	3/10	5.45	1.4	NA	0.48	3
Silver	10	1/10	5.4	0.54	NA	1	1
Sodium	10	7/10	587	280	NA	NA	NA
Zinc	10	10/10	2160	663	NA	85	10
Dieldrin	10	5/10	0.047	0.012	NA	0.00002	4
Endosulfan II	10	2/10	0.0323	0.0045	NA	0.003	2
ppDDE	10	9/10	0.624	0.243	NA	0.002	9
ppDDD	10	10/10	2.3	0.9	NA	0.002	9
ppDDT	10	4/10	0.299	0.09	NA	0.001	5
Benzo (a) Anthracene	10	4/10	1.15	0.26	NA	0.23	4
Fluoranthene	10	5/10	1.7	0.43	NA	0.6	4
Phenanthrene	10	6/10	2.1	0.55	NA	0.225	5
Pyrene	10	6/10	3.3	0.9	NA	0.35	6
Total Petroleum Hydrocarbons	10	10/10	2100	876	NA	NA	NA

AOC 11
Summary of Ecological Risk Information
Devens, MA

Analyte	Number of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/g)	Average Concentration (µg/g)	Background Concentration (µg/g)	Screening Criteria (µg/g)	Number of Sample Locations Where Ecological Benchmark is Exceeded
Nashua River Sediment							
Aluminum	5	5/5	24100	13922	10500	1700	5
Antimony	5	1/5	163	32.6	NA	2	1
Arsenic	5	5/5	20.5	11	26	5	4
Barium	5	5/5	659	216.3	26.2	41	4
Beryllium	5	1/5	1.96	0.39	NA	0.88	1
Cadmium	5	5/5	303	71.9	0.5	0.44	5
Calcium	5	5/5	4710	2468	1100	NA	NA
Chromium	5	5/5	435	157	15.9	26	4
Copper	5	5/5	470	200	14.3	16	5
Iron	5	5/5	21300	16560	7900	2000	5
Lead	5	5/5	760	299	12.5	4	5
Magnesium	5	5/5	3390	2618	3100	NA	NA
Manganese	5	5/5	512	253	600	428	1
Mercury	5	5/5	11	4.15	0.05	0.11	5
Nickel	5	5/5	45.7	20.52	18.6	16	3
Potassium	5	5/5	1980	1236	292	NA	NA
Selenium	5	1/5	28.1	5.62	0.2	0.48	1
Silver	5	4/5	19.2	8	0.2	1	4
Sodium	5	5/5	250	179	289	NA	NA
Vanadium	5	5/5	69.2	29.4	13.3	10	5
Zinc	5	5/5	724	361	55.6	85	4
Dieldrin	5	2/5	0.0333	0.009	NA	0.00002	2
Endosulfan I	5	3/5	0.0312	0.0125	NA	0.0003	3
Endosulfan II	5	4/5	0.00993	0.0037	NA	0.0003	4
Endosulfan Sulfate	2	1/2	0.00678	0.00337	NA	0.0003	1
Heptachlor	5	3/5	0.0153	0.0071	NA	0.0003	3
Heptachlor Epoxide	5	4/5	0.0372	0.016	NA	0.0003	4
PCB 1016	5	2/5	1.08	0.329	NA	0.007	2
PCB 1254	5	1/5	0.274	0.055	NA	0.06	1
PCB 1260	5	2/5	1.18	0.307	NA	0.005	2
ppDDD	5	5/5	0.2	0.077	NA	0.002	5
ppDDE	5	4/5	0.12	0.032	NA	0.002	4
ppDDT	5	4/5	0.22	0.063	NA	0.001	4
2-Methylnaphthalene	5	1/5	0.15	0.03	NA	0.065	1
Anthracene	5	1/5	4.8	0.96	NA	0.085	1
Benzo (a) anthracene	5	4/5	1.8	0.76	NA	0.23	3
Benzo (b) fluoranthene	5	3/5	2.5	0.85	NA	2	1

AOC 11
Summary of Ecological Risk Information
Devens, MA

Analyte	Number of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/g)	Average Concentration (µg/g)	Background Concentration (µg/g)	Screening Criteria (µg/g)	Number of Sample Locations Where Ecological Benchmark is Exceeded
Nashua River Sedirnent							
Bis (2-Ethythexyl) Phthalate	5	5/5	70	16	NA	1.19	5
Chrysene	5	4/5	2.6	1.1	NA	0.4	3
Fluoranthrene	5	5/5	13	3.5	NA	0.6	4
Flourene	5	2/5	2.1	0.5	NA	0.035	2
Phenanthrene	5	5/5	21	5.59	NA	0.225	5
Pyrene	5	5/5	5	2.9	NA	0.35	5
Total Petroleum Hydrocarbons	5	5/5	3300	1498	NA	NA	NA

This table is a summary of the ecological risk data as reported in the January 1996 Revised Final Site Investigation Report, Data Item A009.
Ecological Benchmark is a combination of State and Federal Standards and guidance values intended to be protective of aquatic and semi-terrestrial receptors.
The ecological benchmarks for sediment analytes were derived as the lowest of available criteria and other guidance values. These values were used for the purpose of eliminating areas and/or analytes that do not represent an ecological risk. Conversely, the exceedance of these conservative screening values does not necessarily imply that ecological impacts will occur, because they are not based on the site-specific attributes that determine exposure and toxicological response (e.g., sensitivity of resident organisms).
µ/g = micrograms per gram

AOC 11
Summary of Ecological Risk Information
Devens, MA

Analyte	Number of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/L)	Average Concentration (µg/L)	Background Concentration (µg/L)	MCL (µg/L)	Massachusetts Drinking Water Standard (µg/L)	Screening Criteria (µg/L)	Number of Locations Where Screening Criteria is Exceeded (µg/L)
Northern Wetland Surface Water									
Aluminum	5	4/5	26900	11340	733	50-200	50-200	87	4
Antimony	5	2/5	155	49.52	NA	6	6	30	2
Barium	5	5/5	2730	705	40.1	2000	2000	NA	5
Beryllium	5	4/5	7.77	3.2	5	4	4	5.3	1
Cadmium	5	4/5	147	44.9	4	5	5	2.33	4
Calcium	5	5/5	280000	120400	20600	NA	NA	NA	5
Chromium	5	4/5	301	114	6	100	100	11	4
Copper	5	4/5	578	217	8.1	1300	1300	25.8	4
Iron	5	5/5	750000	325195	1630	300	300	1000	4
Lead	5	4/5	1800	434	8.68	15	15	10.2	4
Magnesium	5	5/5	13400	8364	3340	NA	NA	NA	5
Manganese	5	5/5	2090	1272	357	50	50	NA	5
Mercury	5	4/5	2.5	1.21	24	2	2	0.012	4
Potassium	5	4/5	10100	4624	3150	NA	NA	NA	4
Silver	5	2/5	78.7	21.1	NA	100	100	0.12	2
Sodium	5	5/5	14300	10604	36300	NA	NA	NA	5
Thallium	5	2/5	513	136	NA	2	2	40	2
Vanadium	5	3/5	127	40.1	11	NA	NA	NA	3
Zinc	5	5/5	12000	3344	33.4	5000	5000	230	4
Endrin	5	1/5	0.0479	0.0096	NA	2	2	0.002	1
Heptachlor	5	1/5	0.0219	0.0044	NA	0.4	0.4	0.003	1
Heptachlor Epoxide	5	1/5	0.0212	0.0042	NA	0.2	0.2	0.003	1
Isodrin	5	1/5	0.00793	0.0016	NA	NA	NA	NA	1
ppDDD	5	3/5	0.38	0.112	NA	NA	NA	0.001	3
ppDDE	5	3/5	0.152	0.0474	NA	NA	NA	0.001	3
ppDDT	5	3/5	0.43	0.099	NA	NA	NA	0.001	3
Total Petroleum Hydrocarbons	5	2/5	260	94	NA	NA	NA	NA	3

AOC 11
Summary of Ecological Risk Information
Devens, MA

Analyte	Number of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/L)	Average Concentration (µg/L)	Background Concentration (µg/L)	MCL (µg/L)	Massachusetts Drinking Water Standard (µg/L)	Screening Criteria (µg/L)	Number of Sample Locations Where Screening Criteria is Exceeded (µg/L)
Southern Wetland Surface Water									
Aluminum	5	4/5	16000	5283	733	50-200	50-200	87	4
Antimony	5	1/5	62.5	12.5	NA	6	6	30	1
Beryllium	5	3/5	5.86	1.71	5	4	4	5.3	1
Cadmium	5	2/5	101	23.7	4	5	5	1.56	2
Calcium	5	5/5	112000	52900	20600	NA	NA	NA	5
Chromium	5	3/5	135	37.0	6	100	100	11	3
Copper	5	3/5	269	71.96	8.1	1300	1300	16.7	3
Iron	5	4/5	580000	153786	1630	300	300	1000	4
Lead	5	4/5	610	194	8.68	15	15	5.33	4
Magnesium	5	5/5	7310	5298	3340	NA	NA	NA	5
Manganese	5	5/5	562	163	357	50	50	NA	5
Potassium	5	5/5	7140	4008	3150	NA	NA	NA	5
Selenium	5	1/5	6.34	1.268	3.02	50	50	5	1
Silver	5	1/5	21.3	4.26	NA	100	100	0.12	1
Sodium	5	5/5	27400	13062	36300	NA	NA	NA	5
Vanadium	5	1/5	82.8	16.56	11	NA	NA	NA	1
Zinc	5	4/5	4590	1148	33.4	5000	5000	149	3
Dieldrin	5	1/5	0.016	0.0032	NA	NA	NA	0.001	1
ppDDD	5	4/5	0.84	0.2396	NA	NA	NA	0.001	4
ppDDE	5	4/5	0.146	0.0452	NA	NA	NA	0.001	4
ppDDT	5	3/5	0.0788	0.02854	NA	NA	NA	0.001	3
4-Methylphenol	5	1/5	32	6.4	NA	NA	NA	NA	1
1,1,1-Trichloroethane	5	2/5	2.6	2.1	NA	200	200	NA	2
Total Petroleum Hydrocarbons	5	2/5	220	74	NA	NA	NA	NA	4
Nashua River Surface Water									
Aluminum	5	5/5	218	152.8	733	50-200	50-200	87	5
Calcium	5	5/5	16900	15680	20600	NA	NA	NA	5
Lead	5	2/5	5.93	2.27	8.68	15	15	1.32	2
Magnesium	5	5/5	2460	2260	3340	NA	NA	NA	5
Potassium	5	5/5	4860	3968	3150	NA	NA	NA	5
Sodium	5	5/5	35500	32760	36300	NA	NA	NA	5

This table is a summary of ecological risk data as reported in the January 1996 Revised Final Site Investigation Report, Data Item A009.
Ecological Benchmark is a combination of State and Federal Standards and guidance values intended to be protective of aquatic and semi-terrestrial receptors.
µg/L = micrograms per liter
MCL = maximum contaminant level

AOC 41
Summary of Ecological Risk Information
Devens, MA

Analyte	Number of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/g)	Average Concentration (µg/g)	Background Concentration (µg/g)	Ecological Benchmark (µg/g)	Number of Sample Locations Where Ecological Benchmark is Exceeded
Surface Soil							
Antimony	10	3/10	19.5	3.3	NA	7	2
Barium	10	10/10	307	69.2	42.5	42.5	5
Beryllium	10	6/10	2.2	0.72	0.347	0.88	5
Cadmium	10	2/10	15.5	7.57	2	2	0
Copper	10	10/10	54.4	17.2	8.39	34	2
Lead	10	10/10	1400	287.9	48.4	48.4	5
Zinc	10	10/10	9200	1003.7	35.5	640	1
Sediment							
4,4'-DDD	4	2/4	0.046	0.022	NA	0.018	2
4,4'-DDE	4	3/4	0.038	0.019	NA	0.018	2
Heptachlor	4	1/4	0.31	0.01	NA	0.022	1
Arsenic	4	4/4	13.5	6.5	NA	5	1
Lead	4	4/4	40	21.3	NA	27	1
Zinc	4	4/4	98.1	39.7	NA	85	1

This table is a summary of the ecological risk data as reported in the January 1996 Revised Final Site Investigation Report, Data Item A009.

Ecological Benchmark is a combination of State and Federal Standards and guidance values intended to be protective of aquatic and semi-terrestrial receptors.

The ecological benchmarks for sediment analytes were derived as the lowest of available criteria and other guidance values. These values were used for the purpose of eliminating areas and/or analytes that do not represent an ecological risk. Conversely, the exceedance of these conservative screening values does not necessarily imply that ecological impacts will occur, because they are not based on the site-specific attributes that determine exposure and toxicological response (e.g., sensitivity of resident organisms).

µg/g = micrgrams per gram

AOC 40
Summary of Human Health Risk Information
Devens, MA

Analyte	Number of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/g)	Average Concentration (µg/g)	Background Concentration (µg/g)	Screening Health Standard (Region III RBC) (µg/g)	Site Specific Health Standard (MCP S-2) (µg/g)	Number of Sample Locations Where Site-Specific Health Standard is Exceeded
Surface Soil								
Arsenic	3	3/3	45	32.6	21	0.43	30	2
4,4'-DDD	3	1/3	0.101	0.047	NA	2.7	3	0
4,4'-DDT	3	1/3	0.232	0.131	NA	1.9	2	0
Anthracene	3	1/3	0.514	0.35	NA	23000	2500	0
Benzo(a)Anthracene	3	1/3	1.04	0.45	NA	0.88	1	1
Benzo(a)Pyrene	3	1/3	1.3	0.56	NA	0.088	0.7	1
Benzo(a)Fluoranthene	3	1/3	0.969	0.44	NA	0.88	1	0
Benzo(k)Fluoranthene	3	1/3	1.72	0.84	NA	8.8	10	0
Chrysene	3	1/3	1.2	0.55	NA	88	10	0
Fluoranthrene	3	2/3	2.56	1.18	NA	3100	1000	0
Indeno(1,2,3-cd)Pyrene	3	1/3	0.275	0.16	NA	0.88	1	0
Phenathrene	3	1/3	1.11	0.51	NA	NA	100	0
Pyrene	3	2/3	2.49	1.1	NA	23000	2000	0
Sediment								
Arsenic	25	25/25	390	78	NA	0.43	30	14
Iron	25	25/25	45000	15258	NA	23000	NA	NA
Lead	25	25/25	570	69	NA	NA	600	0
Manganese	25	25/25	3000	610	NA	1800	NA	NA
Zinc	25	17/25	690	82	NA	23000	2500	0
4,4'-DDD	25	9/25	6.2	0.48	NA	2.7	3	1
Benzo(a)Anthracene	25	3/25	4.31	0.49	NA	0.88	1	1
Benzo(a)Pyrene	25	2/25	5.96	0.98	NA	0.088	0.7	2
Benzo(b)Fluoranthene	25	3/25	5.3	0.63	NA	0.88	1	2
Indeno(1,2,3-cd)Pyrene	25	1/25	1.64	0.10	NA	0.88	1	1

This table is a summary of Risk Evaluation data presented in the 1993 RI Report and the 1993 RI Addendum Report
(µg/g) = micrograms per gram
MCP = Massachusetts Contingency Plan
RBC = risk based concentrations

AOC 40
Summary of Human Health Risk Information
Devens, MA

Analyte	Number of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/L)	Average Concentration (µg/L)	Background Concentration (µg/L)	MCL (µg/L)	Massachusetts Drinking Water Standards (µg/L)	Region III Tap Water Standard (µg/L)	MCP GW-3 (µg/L)
Surface Water									
Arsenic	9	9/9	17.7	7.98	NA	50	50	0.045	400
Iron	9	9/9	3200	1590	NA	300	300	11000	NA
Groundwater[1]									
Unfiltered[2]									
Arsenic	4	2/4	40	17.1	10.5	50	50	0.045	400
Iron	4	4/4	25400	12488	9100	300	300	11000	NA
Manganese	4	4/4	5700	2614	291	50	50	840	NA
Filtered[3]									
Arsenic	3	1/3	19.8	2.98	NA	50	50	0.045	400
Iron	3	2/3	4000	1398	NA	300	300	11000	NA
Manganese	3	3/3	6120	2764	NA	50	50	840	NA

1. Round 1 (March 1993) and Round 2 (June 1993) data; wells CSM-93-01A, CSM-92-02A, and CSM-93-02B were sampled in both rounds. Well CSB-2 was sampled in Round 1 only.
2. Unfiltered samples from monitoring wells CSB-2, CSM-93-01A, CSM-93-02A, CSM-93-02B.
3. Filtered samples from monitoring wells CSB-2, CSM-93-01A, CSM-93-02A.

This table is a summary of Risk Evaluation data presented in the 1993 RI Report and the 1993 RI Addendum Report
(µg/L) = micrograms per liter
MCP = Massachusetts Contingency Plan
MCL = maximum contaminant level

AOC 40
Summary of Ecological Risk Information
Devens, MA

Analyte	Number of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/g)	Average Concentration (µg/g)	Background Concentration (µg/g)	Ecological Benchmark (µg/g)	Number of Sample Locations Where Screening Criteria is Exceeded
Sediment							
Anthracene	25	1/25	3	0.27	NA	.085	1
benzo(a) anthracene	25	2/25	4	0.51	NA	241	0
benzo(a) pyrene	25	2/25	6	1.1	NA	194.5	0
benzo(b) fluoranthene	25	2/25	5	0.64	NA	194.5	0
benzo(k) fluoranthene	25	2/25	10	0.9	NA	194.5	0
bis(2-ethylhexyl) phthalate	25	1/25	2	1.4	NA	21.9	0
Chrysene	25	2/25	8	0.63	NA	194.5	0
Dibenzofuran	25	2/25	0.61	0.15	NA	NA	NA
Fluoranthene	25	11/25	10	1.6	NA	344.6	0
Phenanthrene	25	3/25	6	0.77	NA	25.4	0
Pyrene	25	5/25	20	2.2	NA	239.9	0
DDD	25	16/25	6.2	0.5	NA	0.152	9
DDE	25	14/25	0.72	0.09	NA	0.152	3
DDT	25	6/25	15	0.64	NA	0.152	2
Aluminum	25	25/25	17000	6108	NA	NA	NA
Arsenic	25	25/25	390	78	NA	33	13
Barium	25	24/25	115	36.8	NA	20	16
Beryllium	25	2/25	0.41	0.19	NA	NA	NA
Cobalt	25	8/25	19.6	3.38	NA	50	0
Chromium	25	15/25	64.8	15.1	NA	80	0
Copper	25	16/25	42.9	8.5	NA	70	0
Iron	25	25/25	45000	15232	NA	24000	5
Lead	25	25/25	570	69.5	NA	35	9
Manganese	25	25/25	3000	634	NA	428	13
Mercury	25	7/25	0.72	0.077	NA	0.15	3
Nickel	25	16/25	54.3	10.8	NA	30	2
Selenium	25	5/25	5.77	1.96	NA	NA	NA
Silver	25	4/25	6.35	0.65	NA	1	2
Vanadium	25	18/25	48.6	12.1	NA	NA	NA
Zinc	25	17/25	690	82.5	NA	120	4

This table is a summary of the Risk Evaluation data presented in the 1993 RI Report and the 1993 RI Addendum Report.
(µg/g) = micrograms per gram
MCP = Massachusetts Contingency Plan

The ecological benchmarks for sediment analytes were derived as the lowest of available criteria and other guidance values. These values were used for the purpose of eliminating areas and/or analytes that do not represent an ecological risk. Conversely, the exceedance of these conservative screening values does not necessarily imply that ecological impacts will occur, because they are not based on the site-specific attributes that determine exposure and toxicological response (e.g., sensitivity of resident organisms).

AOC 40
Summary of Ecological Risk Information
Devens, MA

Analyte	Number of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/L)	Average Concentration (µg/L)	Background Concentration (µg/L)	Ecological Benchmark (µg/L)	Number of Locations Where Screening Criteria is Exceeded
Surface Water							
Arsenic	10	10/10	17.7	7.7	NA	190	0
Barium	10	10/10	13.4	10.7	NA	200	0
Chromium	10	2/10	4.76	2.7	NA	88	0
Copper	10	7/10	6.75	4.4	NA	4.8	6
Iron	10	10/10	3200	1560	NA	1000	10
Magnesium	10	10/10	400	151	NA	1000	0
Silver	10	1/10	0.708	0.2	NA	0.12	9
Zinc	10	3/10	86.3	21.8	NA	44	1

Ecological Benchmarks were developed to be protective of aquatic organisms only.
Wildlife exposures were also evaluated, and it was determined that the screening benchmark for sediment (as shown above), would be protective of wildlife as well.
This table is a summary of the ecological risk data as reported in the April 1993 RI Report, and the December 1993 RI Addendum Report, Data Item A009.
µg/L = micrograms per liter

AOC 41
Summary of Human Health Risk Information
Devens, MA

Analyte	No of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/g)	Average Concentration (µg/g)	Background Concentration (µg/g)	Screening Health Standard (Region III RBC) (µg/g)	Site Specific Health Standard (MCP S-2) (µg/g)	No of Sample Locations where Site Specific Health Standard is Exceeded
Surface Soil								
Arsenic	10	10/10	14	8.5	21	0.97	30	0
Beryllium	10	6/10	2.2	0.8	0.347	0.4	0.8	5
Lead	10	10/10	1400	287.9	48.4	500	600	1
Benzo(a)anthracene	10	2/10	2	0.37	NA	1.6	1	1
Benzo(a)pyrene	10	2/10	2	0.5	NA	0.23	0.7	2
Benzo(b)fluoranthene	10	2/10	2	0.38	NA	1.9	1	0
Indeno(1,2,3-c d)pyrene	10	1/10	1	0.23	NA	0.84	1	0
Sediment - Base of Landfill Low Area								
Arsenic	3	4/4	4.83	4.05	21	0.36	30	0
Benzo(a)anthracene	3	1/4	1.6	0.46	NA	0.87	0.7	1
Benzo(a)pyrene	3	1/4	2.1	0.62	NA	0.088	0.7	1
Benzo(b)fluoranthene	3	1/4	2.4	0.68	NA	0.87	0.7	1
Chrysene	3	1/4	2.4	0.65	NA	87	0.7	1
Indeno(1,2,3-c d)pyrene	3	1/4	1.6	0.51	NA	0.87	0.7	1
Aroclor - 1260	3	4/4	0.393	0.25	NA	0.083	2	0
Sediment -New Cranberry Pond								
Aroclor - 1260	4	2/4	0.316	0.15	NA	0.083	2	0
Arsenic	4	4/4	13.5	6.45	NA	0.36	30	0

This table is a summary of the Preliminary Risk Evaluation presented in the October 1995 SI Report.

(µg/g) = micrgrams per gram

RBC = risk based concentrations

MCP = Massachusetts Contingency Plan

AOC 41
Summary of Human Health Risk Information
Devens, MA

Analyte	No of Different Locations Sampled	Frequency of Detection	Maximum Concentration (µg/L)	Average Concentration (µg/L)	Background Concentration (µg/L)	MCL (µg/L)	Massachusetts Drinking Water Standard (µg/L)	Region III Tap Watrer Standard (µg/L)	MCP GW-3 (µg/L)
Surface Soil									
Aluminum	4	3/5	8100	1922	NA	50-200	NA	37000	NA
Iron	4	5/5	16400	4438	NA	300	NA	11000	NA
Lead	4	3/5	43.9	13.3	NA	15	15	NA	30
Manganese	4	5/5	976	268	NA	50	50	840	NA
Groundwater									
1,1,2,2 - Tetrachloroethane	5	5/13	170	17.2	NA	NA	NA	0.052	20000
Tetrachloroethylene	5	2/13	10	1.58	NA	5	5	1.1	5000
Trichloroethylene	5	8/13	220	65	NA	5	5	1.6	20000
Aluminum	5	13/13	82800	24253	6870	50-200	50-200	37000	NA
Arsenic	5	13/13	83.4	38.26	10.5	50	50	0.045	400
Beryllium	5	1/13	6.06	3.16	5	4	4	0.016	50
Chromium (total)	5	12/13	149	51.4	14.7	100	100	37000	2000
Iron	5	13/13	110000	43268	9100	300	300	11000	NA
Lead	5	12/13	48.6	20.5	4.25	15	15	NA	30
Manganese	5	13/13	1820	702	291	50	50	840	NA
Nickel	5	6/13	178	61.1	34.3	100	100	730	80
Nitrite, nitrate-non specific	1	2/2	11000	5523	NA	10000	10000	58000	NA

This table is a summary of the Preliminary Risk Evaluation presented in the October 1995 SI Report.

(µg/L) = micrograms per liter

MCP = Massachusetts Contingency Plan

MCL = maximum containment level

TABLE 7-20
SUMMARY OF RI ECOLOGICAL RISK ASSESSMENT [a]
COLD SPRING BROOK LANDFILL

REMEDIAL INVESTIGATION ADDENDUM REPORT
FEASIBILITY STUDY FOR GROUP 1A SITES
FORT DEVENS, MA

ENVIRONMENTAL MEDIA	RECEPTORS	RANGE OF HAZARD INDICES	PRIMARY CONTRIBUTORS TO RISK
LANDFILL CONTAMINANT			
Sediment			
	Semi-aquatic	<1 to 7.8	arsenic, DDD, DDE
	Benthic Invertebrates	<1 to 645	arsenic, DDD, DDE, PAHs
OTHER PARAMETERS			
Sediment			
	Semi-aquatic	No analytes assessed	
	Benthic Invertebrates	<1 to 9.9	lead, mercury, zinc

Note:
[a] Excerpted from Table 9-24 and Table 9-36 through 9-39 of the RI Risk Assessment, December 1992 (E & E. 1993).

APPENDIX F.3 – PRELIMINARY RISK EVALUATION TABLES (AOC 9, SA 12, SA 13 AND AOC 41)

TABLE 7
HUMAN HEALTH EVALUATION OF GROUNDWATER
SA 13 – LANDFILL NO 9.

SUPPLEMENTAL SITE INVESTIGATION DATA PACKAGE
FORT DEVENS, MA

ANALYTE	FREQUENCY OF DETECTION	DETECTED CONCENTRATION [a]		GROUNDWATER BACKGROUND CONCENTRATION (ug/L)	MAXIMUM EXCEEDS BACKGROUND ?	DRINKING WATER STANDARD/ GUIDELINE [b] (ug/L)	MAXIMUM EXCEEDS STANDARD/ GUIDELINE ?
		AVERAGE (ug/L)	MAXIMUM (ug/L)				
ORGANICS							
BIS (2-ETHYLHEXYL) PHTHALATE	2/6	20.5	31	NA	–	6	YES
INORGANICS							
ALUMINUM	6/6	7118.3	17400	6870	YES	50–200	YES
ANTIMONY	2/6	4.11	5.45	3.03	YES	6	NO
ARSENIC	5/6	10.9	24.9	10.5	YES	50	NO
BARIUM	6/6	44.4	81.2	39.6	YES	2000	NO
CALCIUM	6/6	27800	61700	14700	YES	NA	–
CHROMIUM	5/6	15.6	25.7	14.7	YES	100	NO
COPPER	3/6	23.2	25.7	8.09	YES	1300	NO
IRON	6/6	11358.3	26400	9100	YES	300	YES
LEAD	6/6	8.8	17.7	4.25	YES	15	YES
MAGNESIUM	6/6	8431.7	18500	3480	YES	NA	–
MANGANESE	6/6	390	798	291	YES	50	YES
NICKEL	1/6	–	47.1	34.3	YES	100	NO
POTASSIUM	6/6	2931.7	4460	2370	YES	NA	–
SODIUM	6/6	23116.7	27800	10800	YES	28000	NO
VANADIUM	2/6	23.4	28.3	11	YES	260	NO
ZINC	6/6	77.2	87.2	21.1	YES	5000	NO
ANION/CATION							
NITRITE/NITRATE-NON SPECIFIC	6/6	485.4	1500	NA	–	10000	NO

Notes:
[a] Unfiltered samples from 13M-92-01X (3rounds), 13M-93-02X (and duplicate), and 13M-93-03X.
[b] Includes the lowest of either the EPA or MA drinking eater standards, or if no federal standard or guideline is available, the Region III tap water concentration.
NA = not available
ug/L = micrograms per liter
– = not applicable
Shaded compounds exceed standard or guideline.

TABLE 4.1 – 10
HUMAN HEALTH PRE EVALUATION OF SURFACE SOIL
SA 13 – LANDFILL NO. 9

SITE INVESTIGATION REPORT
FORT DEVENS, MA

ANALYTE	SOIL BACKGROUND CONCENTRATION [a] (ug/g)	DETECTED CONCENTRATION [b]		FREQUENCY OF DETECTION	MAXIMUM EXCEEDS BACKGROUND ?	REGION III RESIDENTIAL SOIL CONCENTRATION (ug/g)	MAXIMUM EXCEEDS REGION III CONCENTRATION ?
		AVERAGE (ug/g)	MAXIMUM (ug/g)				
ORGANICS							
4,4' – DDT		0.5	0.7	2/4		5	NO
4,4' – DDD		0.03	0.03	1/4		7.1	NO
4,4' – DDE		0.1	0.16	2/4		5	NO
2 – METHYLNAPHTHALENE		3	3	1/4		NA	NA
ACENAPHTHYLENE		1	1	1/4		NA	NA
ANTHRACENE		0.7	0.7	1/4		23000	NO
BENZO [a] ANTHRACENE		3	3	1/4		1.6	YES
BENZO [a] PYRENE		2	2	1/4		0.23	YES
BENZO [b] FLUORANTHENE		4	4	1/4		1.9	YES
BENZO [g,h,i] PERYLENE		0.9	0.9	1/4		11	NO
BENZO [k] FLUORANTHENE		1	1	1/4		4.4	NO
CARBAZOLE		0.2	0.2	1/4		85	NO
GAMMA–CHLORDANE [c]		0.007	0.007	1/4		1.3	NO
CHRYSENE		3	3	1/4		NA	NA
DIBENZOFURAN		0.3	0.3	1/4		NA	NA
FLUORANTHENE		7	7	1/4		3100	NO
FLUORENE		0.2	0.2	1/4		3100	NO
HEPTACHLOR		0.03	0.035	2/4		0.38	NO
INDENO [1,2,3–c,d] PYRENE		1	1	1/4		0.84	YES
NAPHTHALENE		1	1	1/4		3100	NO
PHENANTHRENE		2	2	1/4		2300	NO
PYRENE		3	3	1/4		2300	NO
INORGANICS							
ALUMINUM	15000	7552.5	8600	2/4	NO	230000	NO
ARSENIC	21	17.4	38	2/4	YES	0.97	YES
BARIUM	42.5	38.3	52.2	2/4	YES	5500	NO
BERYLLIUM	0.347	0.9	1.18	2/4	YES	0.4	YES
CADMIUM	2.0	2.08	2.08	1/4	YES	39	NO
CALCIUM	1400	2542.5	5960	4/4	YES	NA	NA
CHROMIUM	31	20	29	4/4	NO	390	NO
COBALT	NA	6.4	9.34	4/4	NA	NA	NA
COPPER	8.39	9.6	17.1	4/4	YES	2900	NO

TABLE 4.1 – 10
HUMAN HEALTH PRE EVALUATION OF SURFACE SOIL
SA 13 – LANDFILL NO. 9

SITE INVESTIGATION REPORT
FORT DEVENS, MA

ANALYTE	SOIL BACKGROUND CONCENTRATION [a] (ug/g)	DETECTED CONCENTRATION [b]		FREQUENCY OF DETECTION	MAXIMUM EXCEEDS BACKGROUND ?	REGION III RESIDENTIAL SOIL CONCENTRATION (ug/g)	MAXIMUM EXCEEDS REGION III CONCENTRATION ?
		AVERAGE (ug/g)	MAXIMUM (ug/g)				
IRON	15000	11855	16200	4/4	YES	NA	NA
LEAD	48.4	102.6	330	4/4	YES	500	NO
MAGNESIUM	5600	3287.5	4350	4/4	NO	NA	NA
MANGANESE	300	540	1080	4/4	YES	7800	NO
MERCURY	0.22	0.122	0.159	2/4	NO	23	NO
NICKEL	14	21.3	34.6	4/4	YES	1600	NO
POTASSIUM	1700	794.5	1200	4/4	NO	NA	NA
SELENIUM	NA	0.9	0.9	1/4	NA	390	NO
SILVER	0.086	0.676	0.676	1/4	YES	390	NO
SODIUM	131	211	269	4/4	YES	NA	NA
VANADIUM	28.7	13.2	18.3	4/4	NO	550	NO
ZINC	35.5	191.8	480	3/3	YES	23000	NO
OTHER							
TOTAL PETROLEUM HYDROCARBONS	NA	200.5	251	2/4	NA	NA	NA

Notes:

[a] Base-wide background soil inorganics database
[b] Surface soil samples from sampling stations 13S–92–03X, 13S–92–04X, 13D–92–04X, and 13D–92–05X
[c] The Region III residential soil concentration for chlordan was used as a surrogate for gamma–chlordane.
NA = not available, not applicable
ug/g = micrograms per gram

TABLE 4.1-11
HUMAN HEALTH PRE EVALUATION OF GROUNDWATER
SA 13 - LANDFILL NO. 9

SITE INVESTIGATION REPORT
FORT DEVENS, MA

ANALYTE	FREQUENCY OF DETECTION	DETECTED CONCENTRATION [a]		GROUNDWATER BACKGROUND CONCENTRATION (µg/L)	MAXIMUM EXCEEDS BACKGROUND ?	DRINKING WATER STANDARD/ GUIDELINE [b] (µg/L)	MAXIMUM EXCEEDS STANDARD/ GUIDELINE ?
		AVERAGE (µg/L)	MAXIMUM (µg/L)				
ORGANICS							
BIS (2-ETHYLHEXYL) PHTHALATE	2/6	20.5	31	NA	–	6	YES
INORGANICS							
ALUMINUM	6/6	7118.3	17400	6870	YES	50-200	YES
ANTIMONY	2/6	4.11	5.45	3.03	YES	6	NO
ARSENIC	5/6	10.9	24.9	10.5	YES	50	NO
BARIUM	6/6	44.4	81.2	39.6	YES	2000	NO
CALCIUM	6/6	27800	61700	14700	YES	NA	–
CHROMIUM	5/6	15.6	25.7	14.7	YES	100	NO
COPPER	3/6	23.2	25.7	8.09	YES	1300	NO
IRON	6/6	11358.3	26400	9100	YES	300	YES
LEAD	6/6	8.8	17.7	4.25	YES	15	YES
MAGNESIUM	6/6	8431.7	18500	3480	YES	NA	–
MANGANESE	6/6	390	798	291	YES	50	YES
NICKEL	1/6	–	47.1	34.3	YES	100	NO
POTASSIUM	6/6	2931.7	4460	2370	YES	NA	–
SILVER	6/6	23116.7	27800	10800	YES	28000	NO
VANADIUM	2/6	23.4	28.3	11	YES	260	NO
ZINC	6/6	77.2	87.2	21.1	YES	5000	NO
ANION/CATION							
NITRITE/NITRATE-NON SPECIFIC	6/6	485.4	1500	NA	–	10000	NO

Notes:

[a] Unfiltered samples from 13M-92-01X (3 rounds), 13M-93-02X (and duplicate), and 13M-93-03X.
[b] Includes the lowest of either the EPA or MA drinking water standards, or if no federal standard or guideline is available, the Region III tap water concentration.
NA = not available.
ug/L = micrograms per liter.
- = not applicable.
Shaded compounds exceed standard or guideline.

TABLE 4.1-12
HUMAN HEALTH PRE EVALUATION OF SURFACE WATER
SA 13 - LANDFILL NO. 9

SITE INVESTIGATION REPORT
FORT DEVENS, MA

ANALYTE	DETECTED CONCENTRATION [a]		FREQUENCY OF DETECTION	DRINKING WATER STANDARD/ GUIDELINE (b) (Fg/L)	MAXIMUM EXCEEDS DRINKING WATER STANDARD/ GUIDELINE?
	AVERAGE (Fg/L)	MAXIMUM (Fg/L)			
ORGANICS					
BIS (2 – ETHYLHEXYL) PHTHALATE	6.9	6.9	1/4	6.1	YES
NITROGLYCERINE	38.5	38.5	1/4	5	YES
INORGANICS					
ALUMINUM	3470	5060	4/4	50 – 200	YES
ARSENIC	5.065	6.29	2/4	50	NO
BARIUM	26.4	29.4	4/4	2,000	NO
CALCIUM	50650	61700	4/4	NA	NA
COPPER	15.7	15.7	1/4	1,300	NO
IRON	3115	3610	4/4	300	YES
LEAD	10.5	18.9	4/4	15	YES
MAGNESIUM	13150	14200	4/4	NA	NA
MANGANESE	743	1020	4/4	50	YES
MERCURY	1.21	1.25	2/4	2	NO
POTASSIUM	3837.5	6710	4/4	NA	NA
SODIUM	24600	26900	4/4	28,000	NO
VANADIUM	12.6	12.6	1/4	260	NO
ZINC	34.7	37.6	2/4	5,000	NO
ANIONS/CATIONS					
NITRITE/NITRATE	62.525	134	4/4	10,000	NO
OTHER					
TOTAL SUSPENDED SOLIDS	877.50	160000	4/4	NA	NA

Notes:
[a] Surface water samples from sampling stations 13D – 92 – 01X to 13D – 92 – 03X (including one duplicate)
[b] Includes the lowest of either the EPA or MA drinking water standards, or if no federal or state standard or guideline is available, the Region III tap water concentration.
NA = not available
ug/L = micrograms per Liter

Table 4.1 – 13
Human Health PRE Evaluation of Sediment
SA 13 – Landfill No. 9

Site Investigation Report
Fort Devens, MA

ANALYTE	DETECTED CONCENTRATION [a]		FREQUENCY DETECTION	REGION III RESIDENTIAL SOIL CONCENTRATION (ug/g)	MAXIMUM EXCEEDS REGION III CONCENTRATION?
	AVERAGE (ug/g)	MAXIMUM (ug/g)			
ORGANICS					
4,4' – DDE	0.03	0.059	2/3	5	NO
CHLOROFORM	0.004	0.004	1/3	280	NO
FLUORANTHENE	0.12	0.12	1/3	3,100	NO
GAMMA – CHLORDANE[b]	0.03	0.049	3/3	1.3	NO
HEPTACHLOR	0.05	0.07	3/3	0.38	NO
PHENANTHRENE	0.048	0.048	1/3	2,300	NO
PYRENE	0.069	0.069	1/3	2,300	NO
INORGANICS (ug/g)					
ALUMINUM	10996.7	21900	3/3	230,000	NO
ARSENIC	9.8	22	3/3	0.97	YES
BARIUM	36.2	58.4	3/3	5,500	NO
BERYLLIUM	2.52	2.52	1/3	0.4	YES
CALCIUM	2546.7	5440	3/3	NA	NA
CHROMIUM	16.8	21	3/3	390	NO
COBALT	3.5	4.1	3/3	NA	NA
COPPER	11.2	25.9	3/3	2,900	NO
IRON	7486.7	11000	3/3	NA	NA
LEAD	19.7	41	3/3	500	NO
MAGNESIUM	2523.3	3400	3/3	NA	NA
MANGANESE	165.3	213	3/3	7,800	NO
NICKEL	14.3	17.7	3/3	1,600	NO
POTASSIUM	561.3	931	3/3	NA	NA
SELENIUM	1.68	1.68	1/3	390	NO
SODIUM	333	561	3/3	NA	NA
VANADIUM	9.3	11.9	3/3	550	NO
ZINC	32.3	46.5	3/3	23,000	NO
OTHER (ug/g)					
TOTAL PETROLEUM HYDROCARE	96.2	164	3/3	NA	NA

Notes:
[a] Sediment samples from sampling stations 13D – 92 – 01X to 13D – 92 – 03X
[b] The Region III residential soil concentration for chlordane was used as a surrogate for gamma – chlordane.
NA = not available
ug/g = micrograms per gram

TABLE 4.1-14
ECOLOGICAL PRE EVALUATION OF SURFACE SOIL
SA 13 - LANDFILL NO. 9

SITE INVESTIGATION REPORT
FORT DEVENS, MA

ANALYTE	SOIL BACKGROUND CONCENTRATION [a] (µg/g)	CONCENTRATION [b]		FREQUENCY OF DETECTION	MAXIMUM EXCEEDS BACKGROUND ?	ECOLOGICAL BENCHMARK (µg/g)	MAXIMUM EXCEEDS BENCHMARK?
		AVERAGE (µg/g)	MAXIMUM (µg/g)				
ORGANICS							
4,4'-DDT	NA	0.5	0.7	2/4	NA	1.07	NO
4,4'-DDD	NA	0.03	0.03	1/4	NA	1.07	NO
4,4'-DDE	NA	0.1	0.16	2/4	NA	1.07	NO
2-METHYLNAPHTHALENE	NA	3	3	1/4	NA	143	NO
ACENAPHTHYLENE	NA	1	1	1/4	NA	2600	NO
ANTHRACENE	NA	0.7	0.7	1/4	NA	14000	NO
BENZO [a] ANTHRACENE	NA	3	3	1/4	NA	8.9	NO
BENZO[a]PYRENE	NA	2	2	1/4	NA	5.5	NO
BENZO[b]FLUORANTHENE	NA	4	4	1/4	NA	180	NO
BENZO[g,h,i]PERYLENE	NA	0.9	0.9	1/4	NA	440	NO
BENZO[k]FLUORANTHENE	NA	1	1	1/4	NA	320	NO
CARBAZOLE	NA	0.2	0.2	1/4	NA	43	NO
GAMMA-CHLORDANE	NA	0.007	0.007	1/4	NA	0.3	NO
CHRYSENE	NA	3	3	1/4	NA	440	NO
DIBENZOFURAN	NA	0.3	0.3	1/4	NA	10	NO
FLUORANTHENE	NA	7	7	1/4	NA	1100	NO
FLUORENE	NA	0.2	0.2	1/4	NA	1100	NO
HEPTACHLOR	NA	0.03	0.035	2/4	NA	0.64	NO
INDENO [1,2,3-c,d] PYRENE	NA	1	1	1/4	NA	320	NO
NAPHTHALENE	NA	1	1	1/4	NA	170	NO
PHENANTHRENE	NA	2	2	1/4	NA	510	NO
PYRENE	NA	3	3	1/4	NA	550	NO
INORGANICS							
ALUMINUM	15000	7552.5	8600	2/4	NO		
ARSENIC	21	17.4	38	2/4	YES	33	YES
BARIUM	42.5	38.3	52.2	2/4	YES	42.5	YES
BERYLLIUM	0.347	0.9	1.18	2/4	YES	0.88	YES
CADMIUM	2	2.08	2.08	1/4	YES	2	YES
CHROMIUM	31	20	29	4/4	NO		
COBALT	NA	6.4	9.34	4/4	NA	50	NO
COPPER	8.39	9.6	17.1	4/4	YES	34	NO
LEAD	48.4	102.6	330	4/4	YES	48.4	YES
MANGANESE	300	540	1080	4/4	YES	1500	NO
MERCURY	0.22	0.122	0.159	2/4	NO		
NICKEL	14.0	21.3	34.6	4/4	YES	100	NO
SELENIUM	NA	0.9	0.9	1/4	NA	0.48	YES
SILVER	0.086	0.676	0.676	1/4	YES	72	NO
VANADIUM	28.7	13.2	18.3	4/4	NO		
ZINC	35.5	191.8	480	3/3	YES	640	NO

Notes:
[a] Base-wide background soil inorganics database
[b] Surface soil samples from sampling stations 13S-92-03X, 13S-92-04X, and 13D-92-05X
NA = not available
ug/g = micrograms per gram

Table 4.1-15
Ecological PRE Evaluation of Surface Water
SA 13 - Landfill No. 9

Site Investigation Report
Fort Devens, MA

ANALYTE	CONCENTRATION [a]		FREQUENCY OF DETECTION	ECOLOGICAL BENCHMARKS (µg/L)	MAXIMUM EXCEEDS BENCHMARK?
	AVERAGE (µg/L)	MAXIMUM (µg/L)			
Organics					
bis (2-ethylhexyl) phthalate	6.9	6.9	1/4	360	NO
nitroglycerine	38.5	38.5	1/4	NA	NA
Inorganics					
aluminum	3470	5060	4/4	87	YES
arsenic	5.1	6.29	2/4	190	NO
barium	26.4	29.4	4/4	NA	NA
copper	15.7	15.7	1/4	19.3[b]	NO
iron	3115	3610	4/4	1000	YES
lead	10.5	18.9	4/4	6.61[b]	YES
manganese	743	1020	4/4	NA	NA
mercury	1.2	1.25	2/4	0.012	YES
vanadium	12.6	12.6	1/4	NA	NA
zinc	34.7	37.6	2/4	172[b]	NO
Other					
total hardness	177500	198000	4/4	---	---
total suspended solids	87750	160000	4/4	---	---

Notes:
[a] Surface water samples from sampling stations 13D-92-01X to 13D-92-03X plus one duplicate
[b] Hardness-dependent criterion. See Section 3.6.2 for methodology used to calculate site-specific hardness-dependent benchmark values
ug/L = micrograms per Liter

Table 4.1 – 16
Ecological PRE Evaluation of Sediment
SA 13 – Landfill No. 9

Site Investigation Report
Fort Devens, MA

Analyte	Concentration [a]		Frequency of Detection	Ecological Benchmarks (Fg/g)	Maximum Exceeds Benchmark?
	Average (Fg/g)	Maximum (Fg/g)			
Organics					
4,4' – DDE	0.03	0.059	2/3	0.0274[b]	YES
chloroform	0.004	0.004	1/3	NA	NA
fluoranthene	0.12	0.12	1/3	62.3[b]	NO
gramma – chlordane	0.03	0.049	3/3	0.00020[b]	YES
heptachlor	0.05	0.07	3/3	0.00364[b]	YES
phenanthrene	0.048	0.048	1/3	4.60[b]	NO
pyrene	0.069	0.069	1/3	43.4[b]	NO
Inorganics					
aluminum	10996.7	21900	3/3	NA	NA
arsenic	9.8	22	3/3	5	YES
barium	36.2	58.4	3/3	NA	NA
beryllium	2.52	2.52	1/3	NA	NA
chromium	16.8	21	3/3	26	NO
cobalt	3.5	4.1	3/3	NA	NA
copper	11.2	25.9	3/3	19	YES
iron	7486.7	11000	3/3	24000	NO
lead	19.7	41	3/3	27	YES
manganese	165.3	213	3/3	428	NO
nickel	14.3	17.7	3/3	22	NO
selenium	1.68	1.68	1/3	NA	NA
vanadium	9.3	11.9	3/3	NA	NA
zinc	32.3	46.5	3/3	85	NO
Other					
total organic carbon	33103.3	91700	3/3	– – –	– – –

Notes:
[a] Sediment samples from sampling stations 13D – 92 – 01X to 13D – 92 – 03X
[b] Benchmark is carbon – normalized using site – specific total organic carbon data (see Section 3.6.2)
NA = not available
Fg/g = micrograms per gram
– – – = Analyte not a CPC for this medium

TABLE 5.1-16
HUMAN HEALTH PRE EVALUATION OF SURFACE SOIL
SA 12 - LANDFILL NO. 8

SITE INVESTIGATION REPORT
FORT DEVENS, MA

ANALYTE	FREQUENCY OF DETECTION	DETECTED CONCENTRATION [a] AVERAGE (ug/g)	DETECTED CONCENTRATION [a] MAXIMUM (ug/g)	SOIL BACKGROUND CONCENTRATION [b] (ug/g)	MAXIMUM EXCEEDS BACKGROUND?	REGION III RESIDENTIAL SOIL CONCENTRATION (ug/g)	MCP S-1 (ug/g)	MAXIMUM EXCEEDS GUIDELINE CONCENTRATION?
ORGANICS								
4,4'-DDT	3/9	0.3	1	NA	–	1.9	2	NO
4,4'-DDD	1/9	0.013	0.013	NA	–	2.7	2	NO
4,4'-DDE	2/9	0.1	0.21	NA	–	1.9	2	NO
ACENAPHTHYLENE	2/9	0.1	0.1	NA	–	NA	100	NO
ACETONE	5/9	0.07	0.14	NA	–	7800	3	NO
ANTHRACENE	1/9	0.2	0.2	NA	–	23000	1000	NO
AROCLOR 1254	1/9	6.9	6.9	NA	–	.0083	2	YES
BENZO [a] ANTHRACENE	1/9	0.4	0.4	NA	–	.87	0.7	NO
BENZO [b] FLUORANTHENE	1/9	1	1	NA	–	.87	0.7	YES
BENZO [k] FLUORANTHENE	1/9	0.4	0.4	NA	–	8.8	0.7	NO
CARBAZOLE	1/9	0.1	0.1	NA	–	32	NA	NO
CHRYSENE	1/9	0.8	0.8	NA	–	87	0.7	MCP
FLUORANTHENE	2/9	0.7	0.8	NA	–	3100	600	NO
PHENANTHRENE	2/9	0.2	0.3	NA	–	NA	100	NO
PYRENE	2/9	0.6	0.8	NA	–	2300	500	NO
INORGANICS								
ALUMINUM	9/9	6841.1	10500	15000	NO	230000	NA	NO
ARSENIC	9/9	10	21	21	NO	0.36	30	REGION III
BARIUM	9/9	45.5	165	42.5	YES	5500	NA	NO
BERYLLIUM	3/9	0.7	0.74	0.347	YES	0.15	0.4	YES
CADMIUM	1/9	0.968	0.968	2.0	NO	39	30	NO
CALCIUM	9/9	1026.3	1660	1400	YES	NA	NA	–
CHROMIUM	9/9	15.2	22.6	31	NO	390	200	NO
COBALT	9/9	3.7	5.66	NA	-	NA	NA	–
COPPER	9/9	7.9	12.4	8.39	YES	2900	NA	NO
IRON	9/9	8406.7	10500	15000	NO	NA	NA	–
LEAD	9/9	121.9	880	48.4	YES	500	300	YES
MAGNESIUM	9/9	2165.6	3360	5600	NO	NA	NA	–
MANGANESE	9/9	150.6	259	300	NO	390	NA	NO
NICKEL	9/9	10.4	16.5	14.0	YES	1600	300	NO
POTASSIUM	9/9	675.6	935	1700	NO	NA	NA	–
SODIUM	8/9	212.1	207	131	YES	NA	NA	–
VANADIUM	9/9	11.7	17.3	28.7	NO	550	NA	NO
ZINC	9/9	118.6	736	35.5	YES	23000	2500	NO
OTHER								
TOTAL PETROLEUM HYDROCAR	4/9	380.5	10400	NA	NO	NA	500	MCP

Notes:
[a] Surface soil samples from sampling stations 12S-92-01X to 12S-92-04X and 12D-92-01X to 12D-92-04X (including one duplicate)
[b] Base-wide background soil inorganics database
NA = not available
ug/g = micrograms per gram
– = not applicable
MCP = Massachusetts Contingency Plan
Shaded compounds exceed standard or guideline.

TABLE 5.1-17
HUMAN HEALTH PRE EVALUATION OF GROUNDWATER
SA 12 - LANDFILL NO. 8

SITE INVESTIGATION REPORT
FORT DEVENS, MA

ANALYTE	FREQUENCY OF DETECTION	DETECTED CONCENTRATION [a]		GROUNDWATER BACKGROUND CONCENTRATION (ug/L)	MAXIMUM EXCEEDS BACKGROUND?	DRINKING WATER STANDARD/ GUIDELINE [b] (ug/L)	MAXIMUM EXCEEDS STANDARD/ GUIDELINE?
		AVERAGE (ug/L)	MAXIMUM (ug/L)				
ORGANICS							
BIS (2-ETHYLHEXYL) PHTHALATE	1/6	9.1	9.1	NA	–	6.1	YES
CHLOROFORM	1/6	1.3	1.3	NA	–	5	NO
INORGANICS							
ALUMINUM	6/6	10486.3	25200	6870	YES	50-200	YES
ANTIMONY	1/6	6.96	6.96	3.03	YES	2	YES
ARSENIC	4/6	30	44.2	10.5	YES	50	NO
BARIUM	5/6	71.1	114	39.6	YES	2000	NO
BERYLLIUM	1/6	6.63	6.63	5	YES	4	YES
CADMIUM	1/6	12.1	12.1	4.01	YES	5	YES
CALCIUM	6/6	33115	117000	14700	YES	NA	–
CHROMIUM	4/6	37.5	55.2	14.7	YES	100	NO
COPPER	4/6	50.3	122	8.09	YES	1300	NO
IRON	6/6	16843	40200	9100	YES	300	YES
LEAD	6/6	125.8	500	4.25	YES	15	YES
MAGNESIUM	6/6	5530	8480	3480	YES	NA	–
MANGANESE	6/6	281.7	990	291	YES	50	YES
MERCURY	3/6	1	1.65	0.243	YES	2	NO
POTASSIUM	6/6	3061.7	5040	2370	YES	NA	–
SODIUM	6/6	4991.7	7400	10800	NO	28000	NO
VANADIUM	4/6	29.7	44.9	11	YES	260	NO
ZINC	6/6	200.7	874	21.1	YES	5000	NO
ANIONS/CATIONS							
NITRITE/NITRATE	2/6	1000	1100	NA	–	10000	NO
OTHER							
TOTAL SUSPENDED SOLIDS	5/5	603600	1270000	NA	–	NA	–

Notes:
[a] Based on unfiltered samples from Round 1 and Round 2
[b] Includes the lowest of either the EPA or MA drinking water standards, or if no federal standard or guideline is available, the Region III tap water concentration.
SA 12 is represented by monitoring well 12M-92-01X and sump samples 12D-92-04X through 12D-92-04X (including one duplicate)
NA = not available
ug/L = micrograms per liter
– = not applicable
Shaded compounds exceed standard or guideline

TABLE 5.1-18
HUMAN HEALTH PRE EVALUATION OF SEDIMENT
SA 12- LANDFILL NO. 8 AREA 1

SITE INVESTIGATION REPORT
FORT DEVENS, MA

ANALYTE	FREQUENCY OF DETECTION	DETECTED CONCENTRATION [a]		REGION III RESIDENTIAL SOIL CONCENTRATION (Fg/g)	MCP S-2 STANDARD (Fg/g)	MAXIMUM EXCEEDS GUIDELINE CONCENTRATIION?
		AVERAGE (Fg/g)	MAXIMUM (Fg/g)			
ORGANICS						
4,4'-DDT	2/6	0.022	0.028	1.9	2	NO
4,4'-DDD	4/6	0.039	0.087	2.7	3	NO
4,4'-DDE	2/6	0.032	0.041	1.9	2	NO
ACENAPHTHYLENE	1/6	0.094	0.094	NA	100	NO
ACETONE	3/6	0.095	0.14	7800	3	NO
ANTHRACENE	1/6	0.069	0.069	2300	1000	NO
BENZO [A] ANTHRACENE	1/6	0.26	0.26	0.87	0.7	NO
BENZO [B] FLUORANTHENE	1/6	0.52	0.52	0.87	0.7	NO
BENZO [K] FLUORANTHENE	2/6	0.17	0.18	8.8	0.7	NO
BIS (2-ETHYLHEXYL) PHTHALATE	1/6	1.4	1.4	46	100	NO
CHRYSENE	2/6	0.44	0.52	87	0.7	NO
DI-N-BUTYL PHTHALATE	6/6	0.348	0.9	7800	NA	–
FLUORANTHENE	5/6	0.458	0.9	3100	600	NO
HEPTACHLOR	1/6	0.02	0.02	0.14	0.2	NO
NAPHTHALENE	1/6	0.1	0.1	3100	4	NO
PHENANTHRENE	6/6	0.233	0.49	NA	700	NO
PYRENE	6/6	0.448	0.98	2300	500	NO
TOLUENE	1/6	0.003	0.003	16000	90	NO
INORGANICS						
ALUMINUM	6/6	16166.667	26300	230000	NA	–
ARSENIC	6/6	15.833	22	0.36	30	(Region III)
BARIUM	6/6	93.233	158	5500	NA	–
BERYLLIUM	3/6	1.226	1.58	0.15	0.8	YES
CADMIUM	4/6	2.303	2.79	39	80	NO
CALCIUM	6/6	1745	2410	NA	NA	–
CHROMIUM	6/6	47.683	62.6	390	600	NO
COBALT	6/6	9.173	14.6	NA	NA	–
COPPER	6/6	31.667	39	2900	NA	NO
IRON	6/6	21466.667	37800	NA	NA	–
LEAD	6/6	64.667	96	500	600	NO
MAGNESIUM	6/6	5605	10300	NA	NA	–
MANGANESE	6/6	288.333	553	390	NA	YES
MERCURY	6/6	0.407	0.829	23	60	NO
NICKEL	6/6	25.667	43.9	1600	700	NO
POTASSIUM	6/6	3050.167	7230	NA	NA	–

TABLE 5.1-18
HUMAN HEALTH PRE EVALUATION OF SEDIMENT
SA 12- LANDFILL NO. 8 AREA 1

SITE INVESTIGATION REPORT
FORT DEVENS, MA

ANALYTE	FREQUENCY OF DETECTION	DETECTED CONCENTRATION [a]		REGION III RESIDENTIAL SOIL CONCENTRATION (Fg/g)	MCP S-2 STANDARD (Fg/g)	MAXIMUM EXCEEDS GUIDELINE CONCENTRATIION?
		AVERAGE (Fg/g)	MAXIMUM (Fg/g)			
SODIUM	6/6	613.167	715	NA	NA	–
VANADIUM	6/6	33.733	60.2	550	NA	–
ZINC	6/6	103.367	135	23000	2500	NO
OTHER						
TOTAL PETROLEUM HYDROCARBONS	6/6	84.8	223	NA	2500	NO

Notes:
[a] Sediment from sampling locations 12D-93-09X to 12D-93-14X.
NA = Not available
– = Not applicable
Shaded compounds exceed standard guideline.
Fg/g = micrograms per gram

TABLE 5.1-19
ECOLOGICAL PRE EVALUATION OF SURFACE SOIL
SA 12 - LANDFILL NO. 8

SITE INVESTIGATION REPORT
FORT DEVENS, MA

Analyte	Soil Background Concentration [a] (ug/g)	Concentration [b]		Frequency of Detection	Maximum Exceeds Background?	Ecological Benchmark (ug/g)	Maximum Exceeds Banchmark?
		Average (ug/g)	Maximum (ug/g)				
Organics							
4,4'-DDT	NA	0.3	1	3/9	NA	1.07	NO
4,4'-DDD	NA	0.013	0.013	1/9	NA	1.07	NO
4,4'-DDE	NA	0.1	0.21	2/9	NA	1.07	NO
acenaphthylene	NA	0.1	0.1	2/9	NA	2600	NO
acetone	NA	0.07	0.14	5/9	NA	2000	NO
anthracene	NA	0.2	0.2	1/9	NA	14000	NO
aroclor 1254	NA	6.9	6.9	1/9	NA	3.1	YES
benzo[a]anthracene	NA	0.4	0.4	1/9	NA	8.9	NO
benzo[b]fluoranthene	NA	1	1	1/9	NA	180	NO
benzo[k]fluoranthene	NA	0.4	0.4	1/9	NA	320	NO
carbazole	NA	0.1	0.1	1/9	NA	43	NO
chrysene	NA	0.8	0.8	1/9	NA	440	NO
fluoranthene	NA	0.7	0.8	2/9	NA	1100	NO
phenanthrene	NA	0.2	0.3	2/9	NA	510	NO
pyrene	NA	0.6	0.8	2/9	NA	550	NO
Inorganics							
aluminum	15000	6841.1	10500	9/9	NO		
arsenic	21	10	21	9/9	NO		
barium	42.5	45.5	165	9/9	YES	42.5	YES
beryllium	0.347	0.7	0.74	3/9	YES	0.88	NO
cadminum	2.00	0.968	0.968	1/9	NO		
chromium	31	15.2	22.6	9/9	NO		
cobalt	NA	3.7	5.66	9/9	NA	50	NO
copper	8.39	7.9	12.4	9/9	YES	34	NO
lead	48.4	121.9	880	9/9	YES	48.4	YES
manganese	300	150.6	259	9/9	NO		
nickel	14.0	10.4	16.5	9/9	YES	100	NO
vanadium	28.7	11.7	17.3	9/9	NO		
zinc	35.5	118.6	736	9/9	YES	640	YES

Notes:
[a] Base-wide background soil inorganics database
[b] Surface soil samples from sampling stations 12S-92-01X to 12S-92-04X, 12D-92-01X to 12D-92-04X, and one duplicate
NA = not available
ug/g = micrograms per gram

TABLE 5.1-20
ECOLOGICAL PRE EVALUATION OF SEDIMENT - AREA 1
SA 12 - LANDFILL NO. 8

SITE INVESTIGATION REPORT
FORT DEVENS, MA

ANALYTE	CONCENTRATION [a]		FREQUENCY OF DETECTION	ECOLOGICAL SOIL BENCHMARK (ug/g)	MAXIMUM EXCEED SOIL BENCHMARK?	ECOLOGICAL SEDIMENT BENCHMARK (ug/g)		MAXIMUM EXCEEDS SEDIMENT BENCHMARK?
	AVERAGE (ug/g)	MAXIMUM (ug/g)						
ORGANICS								
TOLUENE	0.003	0.003	1/6	1,800	NO	NA		NA
ACENAPHTHYLENE	0.094	0.094	1/6	2,600	NO	19	[b]	NO
ACETONE	0.095	0.14	3/6	2,000	NO	NA		NA
ANTHRACENE	0.069	0.069	1/6	14,000	NO	0.085		NO
BENZO(A)ANTHRACENE	0.26	0.26	1/6	8.9	NO	34.2	[b]	NO
BENZO(B)FLUORANTHENE	0.52	0.52	1/6	180	NO	NA		NA
BENZO(K)FLUORANTHENE	0.17	0.18	2/6	320	NO	NA		NA
BIS(2-ETHYLHEXYL)PHTHALATE	1.4	1.4	1/6	84	NO	120		NO
CHRYSENE	0.44	0.52	2/6	440	NO	NA		NA
DI-N-BUTYLPHTHALATE	0.348	0.9	6/6	2,650	NO	NA		NA
FLUORANTHENE	0.458	0.9	5/6	1,100	NO	49	[b]	NO
NAPHTHALENE	0.1	0.1	1/6	170	NO	0.34		NO
PHENANTHRENE	0.233	0.49	6/6	530	NO	3.61	[b]	NO
PYRENE	0.448	0.98	6/6	550	NO	34.1	[b]	NO
HEPTACHLOR	0.02	0.02	1/6	0.64	NO	0.003	[b]	YES
4,4'-DDT	0.022	0.028	2/6	1.07	NO	0.022	[b]	YES
4,4'-DDD	0.039	0.087	4/6	1.07	NO	0.022	[b]	YES
4,4'-DDE	0.032	0.041	2/6	1.07	NO	0.022	[b]	YES
INORGANICS								
ALUMINUM	16,167	26,300	6/6	15,000	YES	NA		NA
ARSENIC	15.8	22	6/6	33	NO	5		YES
BARIUM	93.2	1.58	6/6	42.5	YES	NA		NA
BERYLLIUM	1.23	158	3/6	0.88	YES	NA		NA
CADMIUM	2.30	2.79	4/6	2	YES	0.8		YES
CALCIUM	1,745	2,410	6/6	NA	NA	NA		NA
CHROMIUM	47.7	62.6	6/6	180	NO	26		YES
COBALT	9.17	14.6	6/6	50	NO	NA		NA
COPPER	31.7	39	6/6	28	YES	19		YES

TABLE 5.1-20
ECOLOGICAL PRE EVALUATION OF SEDIMENT - AREA 1
SA 12 - LANDFILL NO. 8

SITE INVESTIGATION REPORT
FORT DEVENS, MA

ANALYTE	CONCENTRATION [a]		FREQUENCY OF DETECTION	ECOLOGICAL SOIL BENCHMARK (ug/g)	MAXIMUM EXCEEDS SOIL BENCHMARK?	ECOLOGICAL SEDIMENT BENCHMARK (ug/g)	MAXIMUM EXCEEDS SEDIMENT BENCHMARK?
	AVERAGE (ug/g)	MAXIMUM (ug/g)					
IRON	21,467	37,800	6/6	NA	NA	24,000	YES
LEAD	64.7	96	6/6	48.4	YES	27	YES
MAGNESIUM	5,605	10,300	6/6	NA	NA	NA	NA
MANGANESE	288	553	6/6	1,500	NO	428	YES
MERCURY	0.407	0.829	6/6	3.6	NO	0.11	YES
NICKLE	25.7	43.9	6/6	35	YES	22	YES
POTASSIUM	3,050	7,230	6/6	NA	NA	NA	NA
SODIUM	613	715	6/6	NA	NA	NA	NA
VANADIUM	33.7	60.2	6/6	28.7	YES	NA	NA
ZINC	103	135	6/6	640	NO	85	YES
OTHER							
TOTAL ORGANIC CARBON	25,732	60,600	6/6	—	—	—	—

Notes:
[a] Sediment samples from sampling stations 12D-93-09X through 12D-93-14X.
[b] Benchmark is carbon-normalized using site-specific total organic carbon data (see Section 3.6.2 of ABB-ES, 1993).
NA = not available
ug/g = micrograms per gram
— = Analyte not a CPC for this medium

TABLE 5.5-13
HUMAN HEALTH PRE RISK EVALUATION OF SURFACE SOIL
SA 41 – UNAUTHORIZED DUMPING AREA (SITE A)

SITE INVESTIGATION REPORT
FORT DEVENS

ANALYTE	SOIL BACKGROUND CONCENTRATION [a] (µg/g)	DETECTED CONCENTRATION [b]		FREQUENCY OF DETECTION	MAXIMUM EXCEEDS BACKGROUND	REGION III RESIDENTIAL SOIL CONCENTRATION (µg/g)	MAXIMUM EXCEEDS REGION III CONCENTRATION ?
		AVERAGE (µg/g)	MAXIMUM (µg/g)				
SELENIUM	NA	0.382	0.382	1/10	NA	390	NO
SILVER	0.086	0.733	0.733	1/10	YES	390	NO
SODIUM	131	202.2	288	10/10	YES	NA	NA
VANADIUM	28.7	9.52	19	9/10	NO	550	NO
ZINC	35.5	1003.7	9200	10/10	YES	23,000	NO
OTHER							
TOTAL PETROLEUM HYDROCARBONS	NA	60	77	4/10	NA	NA	NA

Notes:
[a] Base – wide background soil samples from inorganics database.
[b] Surface soil samples from sampling stations 41S-92-01X thru 41S-92-06X and 41D-92-03X thru 41D-92-06X.
[c] The Region III residential soil concentration was used as a surrogate for alpha – and gamma – chlordane.
NA = not available.
ug/g = micrograms per gram.

TABLE 5.5-14
HUMAN HEALTH PRE RISK EVALUATION OF SURFACE SOIL (LOW AREA)
SA 41 – UNAUTHORIZED DUMPING AREA (SITE A)

SITE INVESTIGATION REPORT
FORT DEVENS, MA

ANALYTE	SOIL BACKGROUND CONCENTRATION [a] (ug/g)	CONCENTRATION [b]		FREQUENCY OF DETECTION	MAXIMUM EXCEEDS BACKGROUND ?	REGION III RESIDENTIAL CONCENTRATIONS (ug/g)	MCP S-2 STANDARD (ug/g)	MAXIMUM EXCEEDS GUIDELINE
		AVERAGE (ug/g)	MAXIMUM (ug/g)					
ORGANICS								
ACENAPHTHYLENE	NA	0.15	0.15	1/4	NA	-	100	NO
ACETONE	NA	0.076	0.076	1/4	NA	7800	3	NO
ANTHRACENE	NA	0.14	0.14	1/4	NA	23000	1000	NO
BENZO [A] ANTHRACENE	NA	1.6	1.6	1/4	NA	0.87	0.7	YES
BENZO [A] PYRENE	NA	2.1	2.1	1/4	NA	0.088	0.7	YES
BENZO [B] FLUORANTHENE	NA	2.4	2.4	1/4	NA	0.87	0.7	YES
BENZO [G,H,I] PERYLENE	NA	1.3	1.3	1/4	NA	-	30	NO
BENZO [K] FLUORANTHEN	NA	0.69	0.69	1/4	NA	8.8	0.7	NO
CHRYSENE	NA	2.4	2.4	1/4	NA	87	0.7	YES
DI-N-BUTYLPHTHALATE	NA	0.46	0.51	2/4	NA	7800	-	NO
FLUORANTHENE	NA	1.0	2.8	3/4	NA	3100	600	NO
INDENO [1,2,3-C,D] PYREN	NA	1.6	1.6	1/4	NA	0.87	0.7	YES
NAPHTHALENE	NA	0.1	0.1	1/4	NA	3100	4	NO
AROCLOR-1260	NA	0.25	0.393	4/4	NA	0.083	2	REGION III
PHENANTHRENE	NA	0.51	0.92	2/4	NA	-	100	NO
PYRENE	NA	0.94	2.6	3/4	NA	2300	500	NO
INORGANICS								
ALUMINUM		5152	5630	4/4	NO	230000	-	NO
ARSENIC	. 21	4.05	4.83	4/4	NO	0.36	30	REGION III
BARIUM	42.5	12.9	15.7	4/4	NO	5500	-	NO
CALCIUM	1400	375	433	4/4	NO	-	-	-
CHROMIUM	31	7.75	9.69	4/4	NO	390	200	NO
COBALT	NA	1.92	2.08	2/4	NA	-	-	-
COPPER	8.39	5.8	6.64	4/4	NO	2900	-	NO
IRON	15000	6518	6900	4/4	NO	-	-	-
LEAD	36.9	19.1	27	4/4	NO	500	300	NO
MANGANESE	300	73.3	82.2	4/4	NO	-	-	NO
NICKEL	14.0	6.88	7.29	4/4	NO	23	300	NO
VANADIUM	28.7	7.98	8.89	4/4	NO	550		NO
ZINC	35.5	26.4	30.1	4/4	NO	23000	2500	NO

Notes:
[a] Base-wide background soil inorganics database.
[b] Surface soil samples from sampling stations 41D-93-07X thru 41D-93-09X (plus one dup).
NA = not available.
ug/g = micrograms per gram.

TABLE 5.5-15
HUMAN HEALTH PRE RISK EVALUATION OF GROUNDWATER
SA 41 – UNAUTHORIZED DUMPING AREA (SITE A)

SITE INVESTIGATION REPORT
FORT DEVENS, MA

ANALYTE	FREQUENCY OF DETECTION	DETECTED CONCENTRATION [a]		GROUNDWATER BACKGROUND CONCENTRATION (µg/L)	MAXIMUM EXCEEDS BACKGROUND ?	DRINKING WATER STANDARD/ GUIDELINE [b] (µg/L)	MAXIMUM EXCEEDS STANDARD/ GUIDELINE ?
		AVERAGE (µg/L)	MAXIMUM (µg/L)				
ORGANICS							
1,1,2,2-TETRACHLOROETHANE	5/13	44.9	170	NA	–	0.052	YES
2,4,6-TRINITROTOLUENE	1/13	0.718	0.718	NA	–	2.2	NO
CHLOROFORM	1/13	0.73	0.73	NA	–	5	NO
ENDRIN	1/13	0.038	0.038	NA	–	2	NO
METHYLETHYL KETONE / 2-BUTANONE	1/13	83	83	NA	–	350	NO
TETRACHLOROETHYLENE	2/13	6.2	10	NA	–	5	YES
TOLUENE	2/13	20.8	41	NA	–	1000	NO
TRICHLOROETHYLENE	8/13	86.8	220	NA	–	5	YES
1,2-DICHLOROETHLENES	1/13	1.8	1.8	NA	–	70	NO
INORGANICS							
ALUMINUM	13/13	24253	82800	6870	YES	50-200	YES
ANTIMONY	6/13	3.65	4.2	3.03	YES	6	NO
ARSENIC	13/13	38.26	83.4	10.5	YES	50	YES
BARIUM	13/13	139.6	268	39.6	YES	2000	NO
BERYLLIUM	1/13	6.06	6.06	5	YES	4	YES
CALCIUM	13/13	11471.5	39200	14700	YES	NA	–
CHROMIUM	12/13	55.38	149	14.7	YES	100	YES
COBALT	4/13	67.2	88.9	25	YES	NA	–
COPPER	11/13	52.06	147	8.09	YES	1300	NO
IRON	13/13	43268.4	110000	9100	YES	300	YES
LEAD	12/13	21.77	48.6	4.25	YES	15	YES
MAGNESIUM	12/13	11336.75	30800	3480	YES	NA	–
MANGANESE	13/13	701.5	1820	291	YES	50	YES
NICKEL	6/13	112.3	178	34.3	YES	100	YES
POTASSIUM	13/13	8558.46	20500	2370	YES	NA	–
SILVER	1/13	6.2	6.2	4.6	YES	100	–
SODIUM	13/13	6597.7	10000	10800	NO	2800	NO
VANADIUM	11/13	60.09	147	11	YES	260	NO
ZINC	12/13	150.27	466	21.1	YES	5000	NO
ANION/CATION							
NITRITE, NITRATE-NON SPECIFIC	3/6	3690.733	11000	NA	–	10000	YES

Notes:
[a] Unfiltered samples from four rounds of samples from 41M-92-01X and two rounds from 41M-93-02B thru 41M-93-05X.
[b] Includes the lowest of either the EPA or MA drinking water standards, or if no federal standard or guideline is available, the Region III tap water concentration.
NA = not available
µg/L = micrograms per liter
– = not applicable
Shaded compounds exceed standard or guideline.

TABLE 5.5-16
HUMAN HEALTH PRE RISK EVALUATION OF SURFACE WATER
SA 41 – UNAUTHORIZED DUMPING AREA (SITE A)

SITE INVESTIGATION REPORT
FORT DEVENS, MA

ANALYTE	FREQUENCY OF DETECTION	DETECTED CONCENTRATION [a]		DRINKING WATER STANDARD/GUIDELINE [b] (µg/L)	MAXIMUM EXCEEDS DRINKING WATER STANDARD/GUIDELINE ?
		AVERAGE (µg/L)	MAXIMUM (µg/L)		
ORGANICS					
1,2-DICHLOROETHANE	1/5	1.3	1.3	5	NO
TOLUENE	1/5	0.56	0.56	1000	NO
INORGANICS					
ALUMINUM	3/5	3156.667	8100	50-200	YES
ARSENIC	5/5	6.748	17	50	NO
BARIUM	3/5	29.583	64.8	2000	NO
CALCIUM	5/5	4130	7600	NA	–
CHROMIUM	1/5	8.82	8.82	100	NO
COPPER	1/5	15.8	15.8	1300	NO
IRON	5/5	4438	16400	300	YES
LEAD	3/5	21.71	43.9	15	YES
MAGNESIUM	5/5	1115.4	2170	NA	–
MANGANESE	5/5	267.94	976	50	YES
POTASSIUM	4/5	1247.25	2570	NA	–
SODIUM	5/5	2894	4260	28000	NO
VANADIUM	1/5	24.9	24.9	260	NO
ZINC	1/5	98	98	5000	NO

Notes:
[a] Surface water from sampling locations 41D-92-01X, 41D-92-02X with 1 duplicate, 41D-93-10X, and 91D-93-11X.
[b] Includes the lowest of either the USEPA or MADEP drinking water standards, or if no federal or state standard or guideline is available, the Region III tap water concentration.
NA = Not available
µg/L = micrograms per Liter
– = not applicable
Shaded compounds exceed standard or guideline.

TABLE 5.5-17
HUMAN HEALTH PRE RISK EVALUATION OF SEDIMENT - NEW CRANBERRY POND
SA 41 UNAUTHORIZED DUMPING AREA (SITE A)

SITE INVESTIGATION REPORT
FORT DEVENS, MA

ANALYTE	FREQUENCY OF DETECTION	DETECTED CONCENTRATION [a] AVERAGE (µg/g)	DETECTED CONCENTRATION [a] MAXIMUM (µg/g)	REGION III RESIDENTIAL SOIL CONCENTRATION (µg/g)	MCP S-2 STANDARD (µg/g)	MAXIMUM EXCEEDS GUIDELINES ?
ORGANICS						
4,4'- DDD	2/4	0.041	0.046	2.7	3	NO
4,4'- DDE	3/4	0.024	0.038	1.9	2	NO
ACETONE	2/4	0.054	0.079	7800	3	NO
CHLOROFORM	1/4	0.012	0.012	100	0.1	NO
DI-N-BUTYL PHTHALATE	1/4	0.29	0.29	7800	NA	NO
HEPTACHLOR	1/4	0.031	0.031	0.14	0.2	NO
PCB 1260	2/4	0.267	0.316	0.083	2	REGION III
INORGANICS						
ALUMINUM	4/4	6097.5	9430	230000	NA	NO
ARSENIC	4/4	6.45	13.5	0.36	30	REGION III
BARIUM	4/4	28.8	63.9	5500	NA	NO
CALCIUM	4/4	767.5	1370	NA	NA	-
CHROMIUM	1/4	6.92	6.92	390	600	NO
COPPER	4/4	6.593	13.6	2900	NA	NO
IRON	4/4	6102.5	9510	NA	NA	-
LEAD	4/4	21.32	40	500	600	NO
MAGNESIUM	4/4	1265	1790	NA	NA	-
MANGANESE	4/4	92.1	178	390	NA	NO
NICKEL	4/4	6.955	12.2	1600	700	NO
POTASSIUM	4/4	525.25	1130	NA	NA	-
SODIUM	4/4	522.5	783	NA	NA	-
VANADIUM	4/4	10.028	19.3	550	NA	NO
ZINC	4/4	39.725	98.1	23000	2500	NO

Notes:
[a] Sediment from sampling locations 41D-92-01X, 41D-92-02X, 41D-93-10X, and 41D-93-11X.
NA = not available
- = not applicable
µg/g = micrograms per gram
MCP = Massachusetts Contingency Plan
Shaded compounds exceed standard or guideline.

TABLE 5.5–18
ECOLOGICAL PRE EVALUATION OF SURFACE SOIL
SA 41 – UNAUTHORIZED DUMPING AREA (SITE A)

SITE INVESTIGATION REPORT
FORT DEVENS, MA

ANALYTE	SOIL BACKGROUND CONCENTRATION [a] (ug/g)	CONCENTRATION [b] AVERAGE (ug/g)	CONCENTRATION [b] MAXIMUM (ug/g)	FREQUENCY OF DETECTION	MAXIMUM EXCEEDS BACKGROUND?	ECOLOGICAL BENCHMARKS (ug/g)	MAXIMUM EXCEEDS BENCHMARK?
ORGANICS							
4,4' – DDT	NA	0.1	0.34	6/10	NA	1.07	NO
4,4' – DDD	NA	0.013	0.013	1/10	NA	1.07	NO
4,4' – DDE	NA	0.1	0.21	6/10	NA	1.07	NO
ACENAPHTHYLENE	NA	0.2	0.3	2/10	NA	2600	NO
ACETONE	NA	0.02	0.02	1/10	NA	2000	NO
ALPHA –CHLORDANE	NA	0.007	0.007	2/10	NA	0.29	NO
ANTHRACENE	NA	0.3	0.3	2/10	NA	14000	NO
BENZO [A] ANTHRACENE	NA	1.5	2	2/10	NA	8.9	NO
BENZO [A] PYRENE	NA	2	2	2/10	NA	5.5	NO
BENZO [B] FLUORANTHENE	NA	1.5	2	2/10	NA	180	NO
BENZO [G,H,I] PERYLENE	NA	0.7	0.7	1/10	NA	440	NO
BENZO [K] FLUORANTHENE	NA	1.25	2	2/10	NA	320	NO
CARBAZOLE	NA	0.3	0.5	2/10	NA	43	NO
CHRYSENE	NA	2	2	2/10	NA	440	NO
FLUORANTHENE	NA	1.7	6	7/10	NA	1100	NO
GAMMA –CHLORDANE	NA	0.02	0.044	6/10	NA	0.29	NO
HEPTACHLOR	NA	0.03	0.043	9/10	NA	0.64	NO
INDENO [1,2,3-C,D] PYRENE	NA	1	1	1/10	NA	320	NO
PHENANTHRENE	NA	0.6	2	6/10	NA	510	NO
PYRENE	NA	1.2	5	7/10	NA	550	NO
INORGANICS							
ALUMINUM	15000	6327	12700	10/10	NO		
ANTIMONY	NA	11	19.5	3/10	NA	7	YES
ARSENIC	21	8.5	14	10/10	NO		
BARIUM	42.5	69.2	307	10/10	YES	42.5	YES
BERYLLIUM	0.347	1.2	2.2	6/10	YES	0.88	YES
CADMIUM	2	8.7	15.5	2/10	YES	2	YES
CHROMIUM	31	14.1	22.9	9/10	NO		
COBALT	NA	4.4	9.3	10/10	NA	50	NO
COPPER	8.39	17.2	54.4	10/10	YES	34	YES
LEAD	48.4	287.9	1400	10/10	YES	48.4	YES
MANGANESE	300	314.6	940	10/10	YES	1500	NO
MERCURY	0.22	0.079	0.081	2/10	NO		
NICKEL	14.0	10.97	22.2	10/10	YES	100	NO
SELENIUM	NA	0.382	0.382	1/10	NA	0.48	NO
SILVER	0.086	0.733	0.733	1/10	YES	72	NO
VANADIUM	28.7	9.52	19	9/10	NO		
ZINC	35.5	1003.7	9200	10/10	YES	640	YES

Notes:
[a] Base–wide background soil inorganics database.
[b] Surface soil samples from sampling stations 41S –92–01X thru 41S –92 –06X and 41D –92 –03X thru 41D –92 –06X.
NA = not available.
ug/g = micrograms per gram.

TABLE 5.5-19
ECOLOGICAL PRE RISK EVALUATION OF SURFACE SOIL (LOW AREA)
SA 41 - UNAUTHORIZED DUMPING AREA (SITE A)

SITE INVESTIGATION REPORT
FORT DEVENS, MA

ANALYTE	SOIL BACKGROUND CONCENTRATION [A] (ug/g)	CONCENTRATION [b] AVERAGE (ug/g)	CONCENTRATION [b] MAXIMUM (ug/g)	FREQUENCY OF DETECTION	MAXIMUM EXCEEDS BACKGROUND?	ECOLOGICAL BENCHMARKS (ug/g)	MAXIMUM EXCEEDS BENCHMARK?
ORGANICS							
ACENAPHTHYLENE	NA	0.15	0.15	1/4	NA	2600	NO
ACETONE	NA	0.076	0.076	1/4	NA	2000	NO
ANTHRACENE	NA	0.14	0.14	1/4	NA	14000	NO
BENZO [A] ANTHRACENE	NA	1.6	1.6	1/4	NA	8.9	NO
BENZO [A] PYRENE	NA	2.1	2.1	1/4	NA	5.5	NO
BENZO [B] FLUORANTHENE	NA	2.4	2.4	1/4	NA	180	NO
BENZO [G,H,I] PERYLENE	NA	1.3	1.3	1/4	NA	440	NO
BENZO [K] FLUORANTHENE	NA	0.69	0.69	1/4	NA	320	NO
CHRYSENE	NA	2.4	2.4	1/4	NA	440	NO
DI-N-BUTYLPHTHALATE	NA	0.46	0.51	2/4	NA	2650	NO
FLUORANTHENE	NA	1.0	2.8	3/4	NA	1100	NO
INDENO [1,2,3-C,D] PYRENE	NA	1.6	1.6	1/4	NA	320	NO
NAPHTHALENE	NA	0.1	0.1	1/4	NA	170	NO
AROCLOR-1260	NA	0.25	0.393	4/4	NA	3.1	NO
PHENANTHRENE	NA	0.51	0.92	2/4	NA	530	NO
PYRENE	NA	0.94	2.6	3/4	NA	550	NO
INORGANICS							
ALUMINUM		5152	5630	4/4	NO		
ARSENIC	21	4.05	4.83	4/4	NO		
BARIUM	42.5	12.9	15.7	4/4	NO		
CHROMIUM	31	7.75	9.69	4/4	NO		
COBALT	NA	1.92	2.08	2/4	NA	50	NO
COPPER	8.39	5.8	6.64	4/4	NO		
LEAD	48.4	19.1	27	4/4	NO		
MANGANESE	300	73.3	82.2	4/4	NO		
NICKEL	14.0	6.88	7.29	4/4	NO		
VANADIUM	28.7	7.98	8.89	4/4	NO		
ZINC	35.5	26.4	30.1	4/4	NO		

Notes:
[a] Base-wide background soil inorganics database.
[b] Surface soil samples from sampling stations 41D-93-07X thru 41D-93-09X (plus one dup).
NA = not available.
ug/g = micrograms per gram.

TABLE 5.5-20
ECOLOGICAL PRE RISK EVALUATION OF SURFACE WATER - NEW CRANBERRY POND
SA 41 - UNAUTHORIZED DUMPING AREA (SITE A)

SITE INVESTIGATION REPORT
FORT DEVENS, MA

	CONCENTRATION [a]				
ANALYTE	AVERAGE (ug/L)	MAXIMUM (ug/L)	FREQUENCY OF DETECTION	ECOLOGICAL BENCHMARK (ug/L)	MAXIMUM EXCEEDS BENCHMARK ?
ORGANICS					
1,2-DICHLOROETHANE	1.3	1.3	1/5	20,000	NO
TOLUENE	0.56	0.56	1/5	1750	NO
INORGANICS					
ALUMINUM	3,157	8,100	3/5	87	YES
ARSENIC	6.75	17	5/5	190	NO
BARIUM	29.6	64.8	3/5	NA	NA
CALCIUM	4,130	7,600	5/5	NA	NA
CHROMIUM	8.82	8.82	1/5	11	NO
COPPER	15.8	15.8	1/5	3.6 [b]	YES
IRON	4,438	16,400	5/5	1,000	YES
LEAD	21.7	43.9	3/5	0.54 [b]	YES
MAGNESIUM	1,115	2,170	5/5	NA	NA
MANGANESE	268	976	5/5	NA	NA
POTASSIUM	1,247	2,570	4/5	NA	NA
SODIUM	2,894	4,260	5/5	NA	NA
VANADIUM	24.9	24.9	1/5	NA	NA
ZINC	98	98	1/5	32.7 [b]	YES
OTHER					
TOTAL HARDNESS	18,400	29,200	5/5	---	---
TOTAL SUSPENDED SOLIDS	93,600	362,000	5/5	---	---

Notes:
[a] Surface water samples from sampling stations 41D-92-01X, 41D-92-02X, (plus dup), 41D-93-10X and 41D-93-11X (plus two dups).
[b] Hardness-dependent criterion; 25 mg/l $CaCO_3$ used because site-specific hardness value (18.4 mg/l) is below the hardness range (25 to 400 mg/l) for which the hardness function is valid (Federal Register, 1992). See Section 3.6.2 of ABB-ES (1993) for methodology used to calculate site-specific hardness-dependent benchmark values.
ug/L = micrograms per liter.
NA = Not available.
--- = Analyte not a CPC for this medium.

TABLE 5.5-21
ECOLOGICAL PRE RISK EVALUATION OF SEDIMENT - NEW CRANBERRY POND
SA 41 - UNAUTHORIZED DUMPING AREA (SITE A)

SITE INVESTIGATION REPORT
FORT DEVENS, MA

ANALYTE	CONCENTRATION [a] AVERAGE (ug/g)	CONCENTRATION [a] MAXIMUM (ug/g)	FREQUENCY OF DETECTION	ECOLOGICAL BENCHMARK (ug/g)	MAXIMUM EXCEEDS BENCHMARK?
ORGANICS					
ACETONE	0.054	0.79	2/4	NA	NA
CHLOROFORM	0.012	0.012	1/4	NA	NA
4,4'-DDD	0.041	0.046	2/4	0.018	YES
4,4'-DDE	0.024	0.038	3/4	0.018	YES
DI-N-BUTYLPHTHALATE	0.29	0.29	1/4	NA	NA
HEPTACHLOR	0.031	0.031	1/4	0.022[b]	YES
AROCLOR 1260	0.267	0.316	2/4	0.39	NO
INORGANICS					
ALUMINUM	6,098	9,430	4/4	NA	NA
ARSENIC	6.5	13.5	4/4	5	YES
BARIUM	28.8	63.9	4/4	NA	NA
CHROMIUM	6.92	6.92	1/4	26	NO
COPPER	6.6	13.6	4/4	19	NO
IRON	6,103	9,510	4/4	24,000	NO
LEAD	21.3	40	4/4	27	YES
MANGANESE	92.1	178	4/4	428	NO
NICKEL	7.0	12.2	4/4	22	NO
VANADIUM	10.2	19.3	4/4	NA	NA
ZINC	39.7	98.1	4/4	85	YES
OTHER					
TOTAL ORGANIC CARBON	20,183	27,600	4/4	---	---

Notes:
[a] Sediment samples from sampling stations 41D-92-01X, 41D-92-02X, 41D-93-10X and 41D-93-11X.
[b] Benchmark is carbon-normalized using site-specific total organic carbon data (see Section 3.6.2 of ABB-ES, 1993).
NA = not available.
u/g = micrograms per gram.
--- = Analyte not a CPC for this medium.

Table 5 – 10
Human Health PRE Evaluation of Surface Soil
Study Area 09 – North Post Landfill

Site Investigation Report, Groups 3, 5, and 6
Fort Devens

Analyte	Soil Background Concentration [a]	Detected Cconcentration [b]		Frequency of Detection	Maximum Exceeds Background ?	Region III Residential Soil Concentration (ug/g)	Maximum Exceeds Region III Concentration ?
		Average	Maximum				
Inorganics (ug/g)							
aluminum	15,000	4,375	4,660	2/2	NO	230,000	NO
arsenic	21	19	20	2/2	NO	0.97	YES
barium	42.5	21	22	2/2	NO	5,500	NO
chromium	31	11	14	2/2	NO	390	NO
cobalt	NA	3.1	3.1	2/2	NA	NA	NA
copper	8.39	12	17	2/2	YES	2,900	NO
lead	34.4	44	81	2/2	YES	500[c]	NO
manganese	300	86	95	2/2	NO	7,800	NO
nickel	14.1	13	16	2/2	YES	1,600	NO
vanadium	28.7	7.2	8.3	2/2	NO	550	NO
zinc	35.5	21	23	2/2	NO	23,000	NO

NOTES:
[a] Base–wide background soil inorganics database.
[b] Surface soil samples from stations 09E–92–03X and 09E–92–04X.
[c] Lead value from USEPA interim guidance on establishing soil cleanup levels at superfund sites. (OSWER Directive 9355.4–02)
NA = Not available, not applicable

Table 5-11
Human Health PRE Evaluation of Subsurface Soil
Study Area 09 - North Post Landfill

Site Investigation Report - Groups 3, 5, and 6
Fort Devens

Analyte	Soil Background Concentration [a]	Detected Cconcentration [b]		Frequency of Detection (out of 7)	Maximum Exceeds Background ?	Region III Commercial/Industrial Concentration (ug/g)	Maximum Exceeds Region III Concentration ?
		Average	Maximum				
Organics (ug/g)							
2–methylnaphthalene		3	3	1	NA	NA	NA
acenaphthene		11	20	2	NA	61,000	NO
acenaphthylene		0.3	0.3	1	NA	NA	NA
anthracene		16	30	2	NA	310,000	NO
benzo(a)anthracene		14	40	3	NA	2.7	YES
benzo(a)pyrene		22	40	2	NA	0.39	YES
benzo(b)fluoranthene		22	40	2	NA	3.2	YES
benzo(g,h,i)perylene		11	20	2	NA	18	YES
benzo(k)flouranthene		11	30	3	NA	7.4	YES
carbazole		10	20	2	NA	140	NO
chrysene		15	40	3	NA	NA	NA
dibenzofuran		5.4	10	2	NA	NA	NA
flouranthene		37	100	3	NA	41,000	NO
fluorene		11	20	2	NA	41,000	NO
ideno(1,2,3–c,d)pyrene		12	20	2	NA	1.4	YES
naphthalene		11	20	2	NA	41,000	NO
phenanthrene		27	100	4	NA	30,000	NO
pyrene		26	70	3	NA	31,000	NO
TPHC		1,832	5,300	7	NA	NA	NA

Table 5 – 11
Human Health PRE Evaluation of Subsurface Soil
Study Area 09 – North Post Landfill

Site Investigation Report – Groups 3, 5, and 6
Fort Devens

Analyte	Soil Background Concentration [a]	Detected Cconcentration [b]		Frequency of Detection (out of 7)	Maximum Exceeds Background ?	Region III Commercial/Industrial Concentration (ug/g)	Maximum Exceeds Region III Concentration ?
		Average	Maximum				
Inorganics (ug/g)							
aluminum	15,000	7,006	8,910	7	NO	3,000,000	NO
antimony	NA	3.0	3.0	1	NA	410	NO
arsenic	21	16	21	7	NO	1.6	YES
barium	42.5	78	223	7	YES	72,000	NO
beryllium	0.347	1.0	1.0	3	YES	0.67	YES
cadmium	2.00	1.5	1.7	3	NO	510	NO
chromium	31	22	32	7	YES	5,100	NO
cobalt	NA	4.5	5.8	7	NA	NA	NA
copper	8.39	17	29	7	YES	38,000	NO
lead	48.4	121	260	7	YES	NA	NA
manganese	300	161	181	7	NO	100,000	NO
mercury	0.22	0.13	0.18	5	NO	310	NO
nickel	14.0	17	24	7	YES	20,000	NO
silver	0.086	0.79	0.79	1	YES	5,100	NO
vanadium	28.7	15	22	7	NO	7,200	NO
zinc	35.5	211	305	7	YES	310,000	NO

Notes:
[a] Base–wide background soil inorganics database.
[b] Subsurface soil samples from sampling stations 09E–92–01X through 09E–92–03X.
NA = not applicable.

Table 5–12
Human Health PRE- Evaluation of Groundwater
Study Area 09 – North Post Landfill

Site Investigation Report – Groups 3, 5, and 6
Fort Devens

Analyte	Groundwater Background Concentration	Maximum Detected Concentration [a]	Maximum Exceeds Background?	Drinking Water Standard/Guideline [b] (ug/l)	Maximum Exceeds Standard/Guideline ?
Organics (ug/l)					
chloroform		0.585		5	NO
TPHC		313		NA	NA
Inorganics (ug/l)					
aluminum	6,870	70,400	YES	50–200	YES
antimony	3.03	3.84	YES	6	NO
arsenic	10.5	220	YES	50	YES
barium	39.6	266	YES	2,000	NO
calcium	14,700	62,100	YES	NA	NA
chromium	14.7	1,040	YES	100	YES
cobalt	25	93.7	YES	10	YES
copper	8.09	143	YES	1,000	NO
iron	9,100	90,000	YES	300	YES
lead	4.25	81.3	YES	15	YES
magnesium	3,480	93,400	YES	NA	NA
manganese	291	3,270	YES	50	YES
nickel	34.3	369	YES	100	YES
potassium	2,370	11,200	YES	NA	NA
silver	4.60	6.22	YES	50	NO
sodium	10,800	4,450	NO	28,400	NO
vanadium	11.0	189	YES	260	NO
zinc	21.1	258	YES	5,000	NO
Anions/Cations (ug/l)					
nitrate/nitrite		1,000		10,000	NO

NOTES:
[a] Maximum from either Round 1 or Rounds 2 & 3. Only unfiltered samples are used for inorganics.
[b] Standard/Guideline selected in order of the following preference: MA drinking water standard, EPA drinking water standard, Region III Tap Water Concentration.
[c] SA 09 is represented by the following monitoring wells: G5M–92–01X, G5M–92–02X, G5M–92–03B, WWTMW–07, and WWTMW–08.
ND Not detected
NA Not available

Table 5 – 13
Human Health PRE Evaluation of Surface Water
Study Area 09 – North Post Landfill

Site Investigation Report – Groups 3, 5, and 6
Fort Devens

Analyte	Detected Concentration [a]		Frequency of Detection	Drinking Water Standard/Guideline (b) (ug/l)	Maximum Exceeds Drinking Water Standard/Guideline ?
	Average	Maximum			
Organics (ug/l)					
bis(2 – ethylhexyl)phthalate	6.8	6.8	1/3	6.1	YES
toluene	1.4	1.4	1/3	1,000	NO
Inorganics (ug/l)					
aluminum	229	229	1/3	110,000	NO
arsenic	17	17	1/3	50	NO
barium	8.4	9.3	3/3	2,600	NO
iron	3,133	5,460	3/3	300	YES
lead	2.3	2.5	3/3	50	NO
manganese	265	393	3/3	3,700	NO

NOTES:
[a] Surface water samples from sampling stations 09D–92–01X to 09D–92–03X.
[b] Includes the highest of either the EPA or MA drinking water standards, or the Region III tap water concentrations.

Table 5 – 14
Human Health PRE Evaluation of Sediment
Study Area 09 – North Post Landfill.

Site Investigation Report – Groups 3, 5, and 6
Fort Devens

Analyte	Detected Concentration [a]		Frequency of Detection	Region III Residential Soil Concentration (ug/g)	Maximum Exceeds Region III Concentration ?
	Average	Maximum			
Organics (ug/l)					
acetone	0.2	0.2	1/3	7,800	NO
Inorganics (ug/l)					
aluminum	4,033	4,360	3/3	230,000	NO
arsenic	7.6	14	3/3	0.97	YES
barium	23	25	3/3	5,500	NO
chromium	8.2	8.5	3/3	390	NO
copper	7.9	12	3/3	2,900	NO
iron	4,060	4,630	3/3	NA	NA
lead	27	46	3/3	500[b]	NO
manganese	50	53	3/3	7,800	NO
mercury	0.083	0.083	1/3	23	NO
nickel	5.8	6.5	3/3	1,600	NO
vanadium	6.3	7.2	3/3	550	NO
zinc	24	30	3/3	23,000	NO

NOTES:
[a] Sediment samples from sampling stations 09D–92–01X through 09D–92–03X.
[b] Lead value from USEPA interim guidance on establishing soil lead cleanup levels at superfund sites. OSWER Directive 9355.4–02)
NA = not available, not applicable.

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Table 5–15
Ecological PRE Evaluation of Surface Soil
Study Area 09 – North Post Landfill

Site Investigation Report – Groups 3, 5, and 6
Fort Devens

Analyte	Soil Background Concentration [a]	Detected Concentration [b]		Frequency of Detection	Maximum Exceeds Background ?	Ecological Benchmark (ug/g)	Maximum Exceeds Benchmark ?
		Average	Maximum				
Inorganics (ug/g)							
aluminum	15,000	4,375	4,660	2/2	NO	14,964	NO
arsenic	21	19	20	2/2	NO	33	NO
barium	42.5	21	22	2/2	NO	42.6	NO
chromium	31	11	14	2/2	NO	830	NO
cobalt	NA	3.1	3.1	2/2	NA	50	NO
copper	8.39	12	17	2/2	YES	34	NO
lead	34.4	44	81	2/2	YES	48.4	YES
manganese	300	86	95	2/2	NO	1,500	NO
nickel	14.0	13	16	2/2	YES	100	NO
vanadium	28.7	7.2	8.3	2/2	NO	28.7	NO
zinc	35.5	21	23	2/2	NO	640	NO

NOTES:
[a] Base–wide background soil inorganics database.
[b] Surface soil samples from sampling stations 09E–92–03X and 09E–92–04X.
NA = Not available, not applicable.

Table 5–16
Ecological PRE Evaluation of Surface Water
Study Area 09 – North Post Landfill

Site Investigation Report
Fort Devens

Analyte	Detected Concentration [a]		Frequency of Detection	Ecological Benchmark (ug/l)	Maximum Exceeds Benchmark ?
	Average	Maximum			
Organics (ug/l)					
bis(2–ethylhexyl)phthalate	6.8	6.8	1/3	360	NO
toluene	1.4	1.4	1/3	1,750	NO
Inorganics (ug/l)					
aluminum	229	229	1/3	87	YES
arsenic	17	17	1/3	190	NO
barium	8.4	9.3	3/3	NA	NA
iron	3,133	5,460	3/3	1,000	YES
lead	2.3	2.5	3/3	1.4	YES
manganese	265	393	3/3	NA	NA

NOTES:
[a] Surface water samples from sampling stations 09D–92–01X to 09D–92–03X.
NA = Not available.

Table 5–17
Ecological PRE Evaluation of Sediment
Study Area 09 – North Post Landfill

Site Investigation Report – Groups 3, 5, and 6
Fort Devens

Analyte	Detected Concentration [a]		Frequency of Detection	Ecological Benchmark (ug/g)	Maximum Exceeds Benchmark ?
	Average	Maximum			
Organics (ug/l)					
acetone	0.2	0.2	1/3	NA	NA
Inorganics(ug/g)					
aluminum	4,033	4,360	3/3	NA	NA
arsenic	7.6	14	3/3	5	YES
barium	23	25	3/3	NA	NA
chromium	8.2	8.5	3/3	26	NO
copper	7.9	12	3/3	19	NO
iron	4,060	4,630	3/3	24,000	NO
lead	27	46	3/3	27	YES
manganese	50	53	3/3	428	NO
mercury	0.083	0.083	1/3	0.11	NO
nickel	5.8	6.5	3/3	22	NO
vanadium	6.3	7.2	3/3	NA	NA
zinc	24	30	3/3	85	NO

NOTES:
[a] Sediment samples from sampling stations 09D–92–01X through 09D–92–03X.
NA = not available, not applicable.

TABLE 7-31
AQUATIC RECEPTOR RISK CHARACTERIZATION
COLD SPRING BROOK POND: SURFACE WATER

REMEDIAL INVESTIGATION ADDENDUM REPORT
FEASIBILITY STUDY FOR GROUP 1A SITES
FORT DEVENS, MA

ANALYTE	AVERAGE EXPOSURE			REASONABLE MAXIMUM EXPOSURE (RME)		
	Average (ug/l)	Chronic Criteria and Toxicity Values [a] (ug/l)	Hazard Quotient [b] (unitless)	Maximum (ug/l)	Acute Criteria and Toxicity Values [a] (ug/l)	Hazard Quotient [b] (unitless)
INORGANICS						
arsenic	7.7	190	4.05E- 02	17.7	360	4.92E–02
barium	10.7	200	5.35E-02	13.4	2000	6.70E–03
chromium	2.7	88	3.10E-02	4.76	740	6.43E–03
copper	4.4	4.8	9.25E-01	6.75	6.6	1.02E+00
iron	1,560	1,000	1.56E+00	3,200	10,000	3.20E–01
manganese	1.51	1,000	1.51E-01	400	10,000	4.00E–02
silver	0.2	0.12	1.78E+00	0.708	0.92	7.70E–01
zinc	21.8	44	4.95E-01	86.3	48	1.80E+00
TOTAL AVERAGE HAZARD INDEX [c]			**5.03E+00**	**TOTAL RME HAZARD INDEX [c]**		**4.01E+00**

Notes:
[a] Criteria from Table 7-28, chosen as described in Section 7.2.3.4.
[b] Hazard Quotient is calculated by dividing analyte concentration by surface water criterion/toxicity value.
[c] Hazard Index is the sum of all hazard quotients.
NA = Not Available
Shaded values represent a hazard index greater than one

TABLE 7 - 32
AQUATIC RECEPTOR RISK CHARACTERIZATION
COLD SPRING BROOK POND: SEDIMENT

REMEDIAL INVESTIGATION ADDENDUM REPORT
FEASIBILITY STUDY FOR GROUP 1A SITES
FORT DEVENS, MA

ANALYTE	AVERAGE EXPOSURE			REASONABLE MAXIMUM EXPOSURE (RME)		
	Average (ug/g)	Sediment Quality Criteria and Guidance Values [a] (ug/g)	Hazard Quotient [b] (unitless)	Maximum (ug/g)	Sediment Quality Criteria and Guidance Values [a] (ug/g)	Hazard Quotient [b] (unitless)
ORGANICS						
anthracene	0.27	0.085	3.18E+00	3	0.085	3.53E+01
benzo(a)anthracene	0.51	241	2.12E-03	4	241	1.66E-02
benzo(a)pyrene	1.1	194.5	5.66E-03	6	194.5	3.08E-02
benzo(b)fluoranthene	0.64	194.5	3.29E-03	5	194.5	2.57E-02
benzo(k)fluoroanthene	0.9	194.5	4.63E-03	10	194.5	5.14E-02
bis(2-ethylhexyl)phthalate	1.4	21.9	6.39E-02	2	21.9	9.13E-02
chrysene	0.63	194.5	3.24E-03	8	194.5	4.11E-02
dibenzofuran	0.15	NA	NA	0.61	NA	NA
fluoranthene	1.6	344.6	4.64E-03	10	344.6	2.90E-02
phenanthrene	0.77	25.4	3.03E-02	6	25.4	2.36E-01
pyrene	2.2	239.9	9.17E-03	20	239.9	8.34E-02
DDD	0.5	0.152	3.29E+00	6.2	0.152	4.08E+01
DDE	0.09	0.152	5.92E-01	0.72	0.152	4.74E+00
DDT	0.64	0.152	4.21E+00	15	0.152	9.87E+01
INORGANICS						
aluminum	6,109	NA	NA	17,000	NA	NA
silver	0.65	1	6.50E-01	6.35	1	6.35E+00
arsenic	78	33	2.36+00	390	33	1.18E+01
barium	36.8	20	1.84E+00	115	20	5.75E+00
beryllium	0.19	NA	NA	0.41	NA	NA
cobalt	3.38	50	6.76E-02	19.6	50	3.92E-01
chromium	15.2	80	1.90E-01	64.8	80	8.10E-01
copper	8.5	70	1.21E-01	42.9	70	6.13E-01
iron	15,233	24,000	6.35E-01	45,000	24,000	1.88E+00
lead	69.4	35	1.98E+00	570	35	1.63E+01
manganese	634	428	1.48E+00	3,000	428	7.01E+00
mercury	0.077	0.15	5.13E-01	0.72	0.15	4.80E+00
nickel	10.8	30	3.60E-01	54.3	30	1.81E+00
selenium	1.96	NA	NA	5.77	NA	NA
vanadium	12.1	NA	NA	48.6	NA	NA
zinc	82.3	120	6.86E-01	690	120	5.75E+00
	TOTAL AVERAGE HAZARD INDEX [c]		**1.91E+01**	**TOTAL RME HAZARD INDEX [c]**		**2.08E+02**

Notes:
[a] Criteria from Table 7-29, chosen as described in Section 7.2.3.4.
[b] Hazard Quotient is calculated by dividing analyte concentration by sediment quality criterion/guidance value.
[c]Hazard Index is the sum of All hazard quotients.
NA = Not Available
Shaded values represent a hazard index greater than one.

TABLE 7-33
SUMMARY OF ECOLOGICAL RISK ASSESSMENT FOR SEMI-AQUATIC RECEPTORS
COLD SPRING BROOK LANDFILL

REMEDIAL INVESTIGATION ADDENDUM REPORT
FEASIBILITY STUDY FOR GROUP 1A SITES
FORT DEVENS, MA

INDICATOR SPECIES	HAZARD INDICES		PRIMARY CONTRIBUTORS TO RISK [C]
	RME [a]	AVERAGE [b]	
Mallard Duck	1.4E + 00	2.2E-01	
Great Blue Haron	6.5E-02	8.6E-03	
Green Frog	2.4E + 00	4.7E-01	arsenic
Painted Turtle	4.9E-01	9.8E-02	
Muskrat	2.8E-01	5.5E-02	
Mink	2.8E-01	5.0E-02	
Raccoon	4.0E-03	7.8E-04	

Notes:

[a] Hls derived under reasonable maximum exposure assumptions (see Section 7.2.3.5); calculations presented in Table R-12 in Appendix R.

[b] Hls derived under average exposure assumptions (see Section 7.2.3.5); calculations presented in Table R-10 in Appendix R.

[c] Anyalytes with calculated HQs in excess of 0.9 for either the RME or average exposure scenerios.

Table 8-49
Summary of Risks

Exposure Scenario	Noncarciogenic Hazard Indices			Carcinogenic Risks		
	Average	Upper Bound	COCs with HI>1 (Upper Bound)	Average	Upper Bound	COCs with cancer Risks > 1 x 10^{v} -6 (Upper Bound)
Surface Soil						
Incidental Ingestion - Adults	6E-04	5E-03	none	4E-08	1E-06	none
Incidental Ingestion - Ages 6 to 18	1E-03	9E-03	none	6E-08	8E-07	none
Dermal Contact - Adults	3E-05	6E-05	none	NC	NC	
Dermal Contact - Ages 6 to 18	3E-05	8E-05	none	NC	NC	
Surface Water - Nashua River						
Incidental Ingestion - Adults	4E-04	1E-03	none	5E-09	6E-08	none
Incidental Ingestion - Ages 6 to 18	6E-04	2E-03	none	9E-09	4E-08	none
Dermal Contact - Adults	3E-03	3E-02	none	9E-07	9E-06	Bis (2-Ethylhexyl) Phthalate
Dermal Contact - Ages 6 to 18	3E-03	4E-02	none	1E-06	1E-05	Bis (2-Ethylhexyl) Phthalate
Sediment - Nashua River						
Dermal Contact - Adults	2E-03	2E-02	none	4E-08	1E-06	none
Dermal Contact - Ages 6 to 18	2E-03	2E-02	none	5E-08	6E-07	none
Surface Water - Northern Wetland						
Dermal Contact - Adults	2E-03	1E-02	none	1E-06	1E-05	4,4'-DDD,4,4'-DDT, Arsenic
Dermal Contact - Ages 6 to 18	4E-03	2E-02	none	1E-06	1E-05	4,4'-DDD,4,4'-DDT
Sediment -Northern Wetland						
Dermal Contact - Adults	4E-04	3E-03	none	NC	NC	none
Dermal Contact - Ages 6 to 18	5E-04	4E-03	none	NC	NC	none
Surface Water - Southern Wetland						
Dermal Contact - Adults	5E-04	2E-03	none	1E-06	7E-06	4,4'-DDD,4,4'-DDT
Dermal Contact - Ages 6 to 18	1E-03	4E-03	none	1E-06	9E-06	none
Sediment - Southern Wetland						
Dermal Contact - Adults	5E-04	5E-04	none	NC	NC	none
Dermal Contact - Ages 6 to 18	5E-04	2E-03	none	NC	NC	none
Air - Inhalation						
Inhalation - Workers In nearby buildings	4E-01	5E-01	none	2E-12	3E-12	none
Subsurface Soil - Remedial Action						
Incidental Ingestion - Workers	4E-03	1E-02	none	2E-08	8E-08	none
Dermal Contact - Workers	1E-05	5E-06	none	NC	NC	none

Notes:
NC = not calculated

Table 9-22: Risk Characterization for the Debris Disposal Area Surface Soils

Compound Name	Screening[1] Criteria	Fort Devens Background	Average	Maximum Detected	Hazard Quotient		
					Background	Average	Maximum
Inorganics (mg/Kg)							
Barium	41.0	54.0	43.3	131	1	1	3
Cadmium	0.440	1.28	1.08	4.50	3	2	10
Calcium	---	810	2,140	3,900	---	---	---
Cooper	28.0	13.5	18.9	49.8	---	1	2
Iron	---	18,000	14,200	18,300	---	---	---
Lead	4.00	48.0	482	2,000	12	121	500
Mercury	3.60	0.110	1.00	6.50	---	---	2
PCB/Pesticides (mg/Kg)							
Isodrin	---	---	0.00179	0.00616	---	---	---
ppDDT	1.07	5.60	1.03	8.00	5	1	7
Semi-Volatiles (mg/Kg)							
Benzo (a) Anthracene	8.90	---	2.25	12.0	---	---	1
Benzo (a) Pyrene	5.50	---	1.71	8.30	---	---	2
Volatiles (mg/Kg)							
1,1,1-Trichloroethane	---	---	0.133	0.360	---	---	---
TPH (mg/Kg)							
Total Petroleum Hydrocarbons	---	---	771	1,400	---	---	---
				Hazard Index Inorganics:	16	125	517
				Hazard Index PCB and Pesticides:	5	1	7
				Hazard Index Semivolatiles:	---	---	3
				Hazard Index Volatiles:	---	---	---
				Hazard Index TPHs:	---	---	---
				Total Hazard Index:	21	126	527

Notes:
1. The Screening Criteria for this Exposure Zone are presented in Table 9-13 and discussed in Section 9.5.

Table 9-23: Risk Characterization for the Northern Wetland Soils

Compound Name	Northern[1] Wetland Screening Criteria	Upstream Wetland (DXD11110)	Upstream Wetland Composite (DXD1112Z) (SD-UWC)	Downstream Wetland (DXD11170)	Northern Wetland Average	Northern Wetland Maximum Detected	Toxicity Sampler (DXD1105Z) (SD-NWC)	Hazard Quotient: Upstream Wetland[2]	Hazard Quotient: Upstream Wetland Composite[2]	Hazard Quotient: Downstream Wetland [3]	Hazard Quotient: Northern Wetland Average [4]	Hazard Quotient: Northern Wetland Maximum [4]	Hazard Quotient: Northern Wetland Toxicity [4]
Inorganics (mg/Kg)													
Aluminum	1,700	12,000	7,210	8,750	13,600	15,600	13,800	7	4	5	8	9	8
Arsenic	5.00	---	---	---	25.0	50.2	45.8	---	---	---	5	10	9
Calcium	---	6,720	4,380	2,090	12,000	14,900	10,100	---	---	---	---	---	---
Chromium	26.0	102	27.0	18.6	74.7	105	67.9	4	1	1	3	4	3
Iron	2,000	8,690	4,210	7,810	36,500	94,200	36,600	4	2	4	18	47	18
Lead	4.00	280	53.0	19.4	393	930	230	70	13	5	98	233	58
Magnesium	---	1,400	953	1,370	2,270	3,050	2,100	---	---	---	---	---	---
Mercury	0.110	2.52	0.506	0.211	1.80	3.15	1.72	23	5	2	16	29	16
Nickel	16.0	---	---	8.75	15.8	24.5	18.5	---	---	1	1	2	1
Potassium	---	---	617	480	544	1,530	1,360	---	---	---	---	---	---
Sodium	---	---	---	---	186	362	299	---	---	---	---	---	---
Zinc	85.0	716	116	43.3	812	2,160	718	8	1	1	10	25	8
PCB/Pesticides													
Endosulfan II	0.00509	---	---	---	---	---	0.00900	---	---	---	---	---	2
PCB 1254	0.0600	---	---	---	---	---	1.26	---	---	---	---	---	21
ppDDD	0.00200	1.80	1.70	0.300	0.702	2.00	1.20	900	850	150	351	1000	600
ppDDE	0.00200	0.373	0.292	0.174	0.240	0.414	0.550	187	146	87	120	207	275
Semi-Volatiles (mg/Kg)													
Benzo (a) Anthracene	0.230	0.810	---	---	0.329	1.15	0.510	4	---	---	1	5	2
Chrysene	0.400	1.50	0.210	---	0.574	1.51	0.560	4	1	---	1	4	1
Fluoranthrene	0.600	1.00	0.260	0.0930	0.489	1.28	0.810	2	---	---	1	2	1
Phenanthrene	0.225	1.40	0.370	---	0.593	1.50	0.790	6	2	---	3	7	4
Pyrene	0.350	2.20	0.510	---	1.27	3.30	1.40	6	1	---	4	9	4
TPH (mg/Kg)													
Total Petroleum Hydrocarbons	---	1,300	430	30.0	831	2,000	370	---	---	---	---	---	---
							Hazard Index Inorganics:	116	26	19	159	359	121
							Hazard Index PCB and Pesticides:	1087	996	237	471	1207	898
							Hazard Index Semivolatiles:	22	4	---	10	27	12
							Hazard Index Volatiles:	---	---	---	---	---	---
							Hazard Index TPHs:	---	---	---	---	---	—
							Total Hazard Index:	1225	1026	256	640	1593	1031

Notes:

1. The Screening Criteria for this exposure zone are presented in Table 9-13 and discussed In Section 9.5.
2. The Screening Criteria used to compute these hazard quotients are the “Upstrearn Wetland Screening Criteria” presented on Table 9-13.
3. The Screening Criteria used to compute these hazard quotients are the “Downstream Wetland Screening Criteria” presented on Table 9-13.
4. The Screening Criteria used to compute these hazard quotients are the “Northern Wetland Screening Criteria” presented on Table 9-13.

Table 9-24: Risk Characterization for the Southern Wetland Soils

Compound Name	Southern[1] Wetland Screening Criteria	Upstream Wetland (DXD11110)	Upstream Wetland Composite (DXD1112Z) (SD-UWC)	Downstream Wetland (DXD11170)	Southern Wetland Average	Southern Wetland Maximum Detected	Toxicity Sampler (DXD1105Z) (SD-SWC)	Hazard Quotient: Upstream Wetland[2]	Hazard Quotient: Upstream Wetland Composite[2]	Hazard Quotient: Downstream Wetland [3]	Hazard Quotient: Southern Wetland Average [4]	Hazard Quotient: Southern Wetland Maximum [4]	Hazard Quotient: Southern Wetland Toxicity [4]
Inorganics (mg/Kg)													
Aluminum	1,700	12,000	7,210	8,750	14,400	22,400	13,300	7	4	5	8	13	8
Arsenic	5.00	---	---	---	33.7	61.1	59.8	---	---	---	7	12	12
Calcium	---	6,720	4,380	2,090	8,030	10,500	5,130	---	---	---	---	---	---
Chromium	26.0	102	27.0	18.6	94.9	171	102	4	1	1	4	7	4
Copper	16.0	225	35.3	16.4	128	296	156	14	2	1	8	19	10
Iron	2,000	8,690	4,210	7,810	20,800	29,200	28,200	4	2	4	10	15	14
Lead	4.00	280	53.0	19.4	279	640	410	70	13	5	70	160	103
Magnesium	---	1,400	953	1,370	1,960	2,520	2,010	---	---	---	---	---	---
Mercury	0.110	2.52	0.506	0.211	2.13	3.40	2.67	23	5	2	19	31	24
Nickel	16.0	---	---	8.75	9.76	28.5	14.7	---	---	1	1	2	1
Potassium	---	---	617	480	711	1,260	---	---	---	---	---	---	---
Selenium	0.480	5.35	---	---	2.88	5.45	4.11	11	---	---	6	11	9
Silver	1.00	---	---	---	1.40	5.40	---	---	---	---	1	5	---
Sodium	---	---	---	---	343	587	219	---	---	---	---	---	---
Zinc	85.0	716	116	43.3	504	1,120	334	8	1	1	6	13	4
PCB/Pesticides (mg/Kg)													
Dieldrin		0.0266	0.0123	---	0.0218	0.0470	---	1330	615	---	1090	2350	---
Endosulfan II	0.00390	---	0.00290	---	0.00915	0.0323	0.0189	---	3	---	2	8	5
ppDDD	0.00200	1.80	1.70	0.300	1.11	2.30	0.470	900	850	150	558	1150	235
ppDDE	0.00200	0.373	0.292	0.174	0.237	0.640	0.330	187	146	87	119	320	165
ppDDT	0.00100	0.194	0.0397	0.0908	0.0950	0.299	0.100	194	40	91	95	299	100
Semi-Volatiles (mg/Kg)													
Benzo (a) Anthracene	0.230	0.810	---	---	0.304	0.900	0.740	4	---	---	1	4	3
Fluoranthrene	0.600	1.00	0.260	0.0930	0.495	1.70	0.990	2	---	---	1	3	2
Phenanthrene	0.225	1.40	0.370	---	0.625	2.10	1.50	6	2	---	3	9	7
Pyrene	0.350	2.20	0.510	---	0.864	3.00	2.40	6	1	—	2	9	7
TPH (mg/Kg)													
Total Petroleum Hydrocarbons	---	1,300	430	30.0	779	2,100	1,200	---	---	---	---	---	---
							Hazard Index Inorganics:	141	28	20	140	288	189
							Hazard Index PCB and Pesticides:	2611	1654	328	1864	4127	505
							Hazard Index Semivolatiles:	18	3		7	25	19
							Hazard Index Volatiles:						
							Hazard Index TPHs:						
							Total Hazard Index:	2770	1685	348	2011	4440	713

Notes:
1. The Screening Criteria for this exposure zone are presented in Table 9-13 and discussed In Section 9.5.
2. The Screening Criteria used to compute these hazard quotients are the “Upstrearn Wetland Screening Criteria” presented on Table 9-13.
3. The Screening Criteria used to compute these hazard quotients are the “Downstream Wetland Screening Criteria” presented on Table 9-13.
4. The Screening Criteria used to compute these hazard quotients are the “Southern Wetland Screening Criteria” presented on Table 9-13.

Table 9-25: Risk Characterization for the Nashua River Sediment

Compound Name	Nashua[1] River Screening Criteria	Upstream River (DXD11130) (SD-NRG2)	Nashua River Average	Nashua River Maximum Detected	Toxicity Sample (DXD11150) (SD-NRG1)	Hazard Quotient			
						Upstream River[2]	Nashua River Average[2]	Nashua River Maximum[3]	Nashua River Toxicity[3]
Inorganics (mg/Kg)									
Aluminum	1,700	3,790	13,900	24,100	8,930	2	8	14	5
Antimony	2.00	---	40.4	163	---	---	20	82	---
Arsenic	5.00	3.06	11.0	20.5	10.3	1	2	4	2
Barium	41.0	23.8	216	659	85.6	1	5	16	2
Beryllium	0.880	---	0.562	1.96	---	---	1	2	---
Cadmium	0.440	1.74	71.9	303	9.91	4	163	689	23
Calcium	---	653	2,470	4,710	1,890	---	---	---	---
Chromium	26.0	13.9	156	435	54.4	1	6	17	2
Copper	16.0	16.9	199	470	87.1	1	13	29	5
Iron	2,000	6,490	16,600	21,300	14,600	3	8	11	7
Lead	4.00	18.6	299	760	110	5	75	190	28
Magnesium	---	1,080	2,620	3,390	2,010	---	---	---	---
Manganese	428	85.6	253	512	235	---	1	1	1
Mercury	0.110	0.111	4.15	11.0	0.780	1	8	100	7
Nickel	16.0	5.30	20.5	45.7	11.4	---	1	3	1
Potassium	---	414	1,240	1,980	978	---	---	---	---
Selenium	0.480	---	5.79	28.1	---	---	12	59	---
Silver	1.00	---	8.09	19.2	5.19	---	8	19	5
Sodium	---	56.6	179	250	179	---	---	---	---
Vanadium	10.0	5.74	29.3	69.2	15.6	1	3	7	2
Zinc	85.0	45.9	361	724	194	1	4	9	2
PCB/Pesticides (mg/Kg)									
Dieldrin		---	0.00938	0.0333	---	---	469	1665	---
Endosulfan I	0.000300	---	0.00224	0.00922	---	---	7	31	---
Endosulfan II	0.000300	---	0.00324	0.00993	0.00180	---	11	33	6
Endosulfan Sulfate	0.000300	---	0.00351	0.00678	---	---	12	23	---
Heptachlor	0.000300	---	0.00477	0.0153	0.00530	---	16	51	18
Heptachlor Epoxide	0.000300	0.00200	0.0162	0.0372	0.00560	17	54	124	19
PCB 1016	0.00700	---	0.358	1.08	---	---	51	154	---
PCB 1254	0.0600	---	0.0739	0.274	---	---	1	5	---
PCB 1260	0.00500	---	0.321	1.18	---	---	64	236	---
ppDDD	0.00200	0.00590	0.0777	0.200	0.0139	3	39	100	7
ppDDE	0.00200	---	0.0329	0.120	0.00550	---	17	60	3
ppDDT	0.00100	---	0.0636	0.220	---	---	64	220	---

Table 9-25: Risk Characterization for the Nashua River Sediment (Continued)

Compound Name	Nashua[1] River Screening Criteria	Upstream River (DXD11130) (SD-NRG2)	Nashua River Average	Nashua River Maximum Detected	Toxicity Sample (DXD11150) (SD-NRG1)	Hazard Quotient			
						Upstream River[2]	Nashua River Average[2]	Nashua River Maximum[3]	Nashua River Toxicity[3]
Semi-Volatiles (mg/K/g)									
2-Methylnaphthalene	0.0650	---	0.0596	0.150	---	---	1	2	---
Anthracene	0.0850	---	1.57	4.80	---	---	19	57	---
Benzo (a) Anthracene	0.230	0.320	0.780	1.80	0.690	1	3	8	3
Benzo (b) Fluoranthrene	2.00	---	0.793	2.50	---	---	---	1	---
Bis (2-Ethylhexyl) Phthalate	1.19	1.60	15.9	70.0	2.70	3	13	59	2
Chrysene	0.400	0.480	1.13	2.60	1.10	1	3	7	3
Fluoranthrene	0.600	0.330	3.50	13.0	0.910	1	6	22	2
Fluorene	0.0350	---	0.545	2.10	---	---	16	60	---
Phenanthrene	0.225	0.410	5.59	21.0	1.10	2	25	93	5
Pyrene	0.350	0.750	2.91	5.00	1.90	2	8	14	5
TPH (mg/Kg)									
Total Petroleum Hydrocarbons	—	170	1,500	3,300	500	---	---	---	---
					Hazard Index Inorganics:	21	268	1252	92
					Hazard Index PCB and Pesticides:	20	805	2702	53
					Hazard Index Semivolatiles:	10	94	323	20
					Hazard Index Volatiles:	---	---	---	---
					Hazard Index TPHs:	---	---	---	---
					Total Hazard Index:	51	1267	4277	165

Notes:
1. The Screening Criteria for this exposure zone are presented in Table 9-13 and discussed in Section 9.5.
2. The Screening Criteria used to compute these hazard quotients are the “Upstream River Screening Criteria” presented on Table 9-13.
3.The Screening Criteria used to compute these hazard quotients are the “Nashua River Screening Criteria” presented on Table 9-13.
Samples Adjacent to AOC-11 (SD-NRG1) and upstream of AOC-11 (SD-NRG2) were used in toxicity tests.

Table 9-26: Risk Characterization for the Sediment Elutriates of the Northern Wetland, Southern Wetland, and Nashua River

Compound Name	Screening[1] Criteria	11T-94-05X (TXD1105Z) (SE-NWC)	11T-94-10X (TXD1110Z) (SE-SWC)	11T-94-12X (TXD1112Z) (SE-UWC)	11T-94-13X (TXD1115X) (SE-NRG2)	11T-94-15X (TXD1115X) (SE-NRG1)	Hazard Quotient				
							11T-94-05X (SE-NWC)[2]	11T-94-10X (SE-SWC)	11T-94-12X (SE-UWC)	11T-94-13X (SE-NRG2)	11T-94-15X (SE-NRG1)
Inorganics (ug/L)											
Aluminum	87.0	5,990	4,330	8,810	380	6,410	69	50	101	4	74
Arsenic	190	20.6	45.5	5.64	4.03	19.1	---	---	---	---	---
Barium	---	55.2	74.4	71.9	32.8	166	---	---	---	---	---
Beryllium	5.30	1.53	1.10	---	---	1.99	---	---	---	---	---
Cadmium	1.10	11.1	19.4	15.0	---	19.7	10	23	16	---	21
Calcium	---	31,700	20,500	15,300	19,200	19,500	---	---	---	---	---
Chromium	11.0	35.9	25.0	28.2	---	114	3	2	3	---	10
Copper	12.0	60.8	70.1	30.9	---	198	5	8	3	---	20
Iron	1,000	25,200	8,100	4,590	1,940	6,300	25	8	5	2	6
Lead	3.20	123	172	34.6	7.22	420	38	85	15	3	176
Magnesium	---	8,990	7,800	7,870	8,700	9,120	---	---	---	---	---
Manganese	---	179	50.5	77.0	1,070	682	---	---	---	---	---
Mercury	0.0120	1.11	2.10	0.893	---	1.19	93	175	74	---	99
Potassium	---	2,940	2,180	---	2,890	3,010	---	---	---	---	---
Sodium	---	36,900	34,400	34,300	38,000	37,900	---	---	---	---	---
Zinc	78.3	437	147	104	---	380	6	2	1	---	3
PBC/Pesticides (ug/L)											
Aldrin	—	0.0547	0.0672	0.0391	---	0.0484	---	---	---	---	---
Alpha-BHC	0.0800	---	---	---	---	0.00720	---	---	---	---	---
Delta-BHC	0.0800	---	---	0.00370	---	---	---	---	---	---	---
Dieldrin	0.00190	0.0334	0.0484	0.0152	0.00830	0.0238	18	26	8	4	13
Endosulfan I	0.0560	---	0.00700	0.00570	---	---	---	---	---	---	---
Heptachlor	0.00380	0.00400	---	---	---	---	1	---	---	---	---
Isodrin	---	0.00340	0.00400	---	---	---	---	---	---	---	---
ppDDD	0.00100	0.0836	0.169	0.209	---	---	84	169	209	---	---
ppDDE	0.00100	0.0425	0.0416	0.0396	---	0.00410	43	42	40	---	4
ppDDT	0.00100	0.0124	0.0124	0.00720	---	0.00390	12	12	7	---	4

Table 9-26: Risk Characterization for the Sediment Elutriates of the Northern Wetland, Southern Wetland, and Nashua River (continued)

Compound Name	Screening[1] Criteria	11T-94-05X (TXD1105Z) (SE-NWC)	11T-94-10X (TXD1110Z) (SE-SWC)	11T-94-12X (TXD1112Z) (SE-UWC)	11T-94-13X (TXD1113X) (SE-NRG2)	11T-94-15X (TXD1115X) (SE-NRG1)	Hazard Quotient				
							11T-94-05X (SE-NWC)[2]	11T- 94-10X (SE-SWC)	11T-94-12X (SE-UWC)	11T-94-13X (SE-NRG2)	11T-94-15X (SE-NRG1)
TPH (ug/L)											
Total Petroleum Hydrocarbons	---	.191	282	172	---	1,940	---	---	---	---	---
						Hazard Index Inorganics:	249	353	218	9	409
						Hazard PCB and Pesticides:	158	249	264	4	21
						Hazard Index Semivolatiles:	---	---	---	---	---
						Hazard Index Volatiles:	---	---	---	---	---
						Hazard Index TPHs:	---	---	---	---	---
						Total Hazard Index:	407	602	482	13	430

Notes:

1. The Screening Criteria for this exposure Zone are presented in Table 9-13 and discussed in Section 9.5.
2. The Screening Criteria used to compute these hazard quotients are the "Upstream Wetland Screening Criteria" presented on Table 9-13.

SE-NWC = Sediment Elutriate from the Northern Wetland Composite Sample.
SE-SWC = Sediment Elutriate from the Southern Wetland Composite Sample.
SE-UWC = Sediment Elutriate from the Upstream Wetland Composite Sample.
SE-NRG1 = Sediment Elutriate from the Nashua River Adjacent to AOC-11.
SE-NRG2 = Sediment Elutriate from the Nashua River Upstream from AOC-11.

Table 9-27: Risk Characterization for the Northern Wetland Surface Water

Compound Name	Northern[1] Wetland Screening Criteria	Upstream Wetland (WXD1111X) (SW-UWG)	Downstream Wetland (WXD1117X)	Northern Wetland Average	Maximum Detected	Toxicity Sample (WXD1102X) (WXD1103X)	Hazard Quotient				
							Upstream Wetland[2]	Dowmstream Wetland[3]	Northern Wetland Average[4]	Northern Wetland Maximum[4]	Northern Wetland Toxicity[4]
Inorganics (ug/L)											
Aluminum	87.0	12,600	635	11,400	26,900	15,900	145	7	130	309	182
Antimony	30.0	---	---	67.5	155	---	---	---	2	5	---
Barium	---	360	6.94	705	2,730	308	---	---	---	---	---
Beryllium	5.30	---	---	3.31	7.77	5.57	---	---	1	1	1
Cadmium	2.33	42.8	---	45.6	147	87.0	65	---	20	63	37
Calcium	---	16,200	7,140	120,000	280,000	129,000	---	---	---	---	---
Chromium	11.0	66.2	---	115	301	180	6	---	11	27	16
Copper	25.8	128	---	218	578	330	20	---	8	22	13
Iron	1,000	31,900	852	325,000	750,000	379,000	32	1	325	750	379
Lead	10.2	240	5.34	434	1,800	1,000	182	8	43	176	98
Magnesium	---	3,010	2,280	8,360	13,400	8,640	---	---	---	---	---
Manganese	---	255	21.8	1,270	2,090	1,340	---	---	---	---	---
Mercury	0.0120	1.71	---	1.22	2.50	1.38	143	---	102	208	115
Potassium	---	1,530	---	4,750	10,100	4,000	---	---	---	---	---
Silver	0.120	---	---	24.1	78.7	---	---	---	201	656	---
Sodium	---	3,040	3,230	10,600	14,300	13,300	---	---	---	---	---
Thallium	40.0	---	---	173	513	---	---	---	4	13	---
Vanadium	---	43.9	---	45.6	127	70.4	---	---	---	---	---
Zinc	230	392	---	3,340	12,000	6,380	7	---	15	52	28
PCB/Pesticides (ug/L)											
Endrin	0.00230	---	---	0.0166	0.0479	0.0283	---	---	7	21	12
Heptachlor	0.00380	0.00730	---	0.00538	0.0219	0.0116	2	---	1	6	3
Heptachlor Epoxide	0.00380	---	---	0.00676	0.0212	0.0122	---	---	2	6	3
Isodrin	---	0.00390	---	0.00258	0.00793	0.00590	---	---	---	---	---
ppDDD	0.00100	0.0431	0.0161	0.122	0.380	0.272	43	16	123	380	272
ppDDE	0.00100	0.0126	0.0129	0.0475	0.152	0.112	13	13	48	152	112
ppDDT	0.00100	0.0105	---	0.103	0.430	0.247	11	---	104	430	248
TPH (ug/L)											
Total Petroleum Hydrocarbons	---	---	---	190	380	215	---	---	---	---	---
						Hazard Index Inorganics:	600	16	862	2282	869
						Hazard Index PBC and Pesticides:	69	29	285	995	650
						Hazard Index Semivolatiles:	---	---	---	---	---
						Hazard Index Volatiles:	---	---	---	---	---
						Hazard Index TPHs:	---	---	---	---	---
						Total Hazard Index:	669	45	1147	3277	1519

Table 9-27: Risk Characterization for the Northern Wetland Surface Water (continued)

Notes:
1. The Screening Criteria for this exposure zone are presented In Table 9-13 and discussed in Section 9.5 .
2. The Screening Criteria used to compute these hazard quotients are the "Upstream Wetland Screening Criteria" presented on Table 9-13.
3. The Screening Criteria used to compute these hazard quotients are the "Downstream Wetland Screening Criteria" presented on Table 9-13.
4. The Screening Criteria used to compute these hazard quotients are the "Northern Wetland Screening Criteria" presented on Table 9-13.

Table 9-28: Risk Characterization for the Southern Wetland Surface Water

Compound Name	Southern[1] Wetland Screening Criteria	Upstream Wetland (WXD1111X) (SW-UWG)	Downstream Wetland (WXD1117X)	Southern Wetland Average	Southern Wetland Maximum Detected	Toxicity Sample (WXD1106X) (WXD1107X)	Hazard Quotient				
							Upstream Wetland[2]	Downstream Wetland[3]	Southern Wetland Average[4]	Southern Wetland Maximum[4]	Southern Wetland Toxicity[4]
Inorganics (ug/L)											
Aluminum	87.0	12,600	635	5,290	16,000	8,240	145	7	61	184	95
Antimony	30.0	---	---	36.5	62.5	---	---	---	1	2	---
Beryllium	5.30	---	---	1.93	5.86	3.51	---	---	---	1	1
Cadmium	1.56	42.8	---	25.7	101	52.2	65	---	17	65	34
Calcium	---	16,200	7,140	52,900	112,000	67,000	---	---	---	---	---
Chromium	11.0	66.2	---	40.4	135	71.7	6	---	4	12	7
Copper	16.7	128	---	75.7	269	139	20	---	5	16	8
Iron	1,000	31,900	852	154,000	580,000	290,000	32	1	154	580	290
Lead	5.33	240	5.34	194	610	309	182	8	37	114	58
Magnesium	---	3,010	2,280	5,300	7,310	6,840	---	---	---	---	---
Manganese	---	255	21.8	162	562	287	---	---	---	---	---
Potassium	---	1,530	---	4,010	7,140	3,150	---	---	---	---	---
Selenium	5.00	---	---	2.28	6.34	3.80	---	---	---	1	1
Silver	0.120	---	---	8.26	21.3	---	---	---	69	178	---
Sodium	---	3,040	3,230	13,100	27,400	9,870	---	---	---	---	---
Vanadium	---	43.9	---	27.6	82.8	48.3	---	---	---	---	---
Zinc	149	392	---	1,150	4,590	2,310	7	---	8	31	16
PCB/Pesticides (ug/L)											
Dieldrin	0.00190	0.0105	---	0.00616	0.0160	---	6	---	3	8	---
Endosulfan I	0.0560	---	---	---	---	0.00318	---	---	---	---	.0568
Isodrin	---	---	---	---	---	0.00330	---	--	---	---	---
ppDDD	0.00100	0.0431	0.0161	0.240	0.840	0.428	43	16	240	840	428
ppDDE	0.00100	0.0126	0.0129	0.0456	0.146	0.0776	13	13	46	146	78
ppDDT	0.00100	0.0105	---	0.0290	0.0788	0.0491	11	---	29	79	42
Semi-Volatiles (ug/L)											
4-Methylphenol	---	---	---	7.52	32.0	---	---	---	---	---	---

Table 9-28: Risk Characterization for the Southern Wetland Surface Water (continued)

Compound Name	Southern[1] Wetland Screening Criteria	Upstream Wetland (WXD1111X) (SW-UWG)	Downstream Wetland (WXD1117X)	Southern Wetland Average	Southern Wetland Maximum Detected	Toxicity Sample (WXD1106X) (WXD1107X)	Hazard Quotient				
							Upstream Wetland[2]	Downstream Wetland[3]	Southern Wetland Average[4]	Southern Wetland Maximum[4]	Southern Wetland Toxicity[4]
Volatiles (ug/L)											
1,1,1-Trichloroethane	---	---	—	1.14	2.60	1.55	---	---	---	---	---
TPH (ug/L)											
Total Petroleum Hydrocarbons	---	---	---	220	350	340	---	---	---	---	---
						Hazard Index Inorganics:	457	16	356	1184	510
						Hazard Index PCB and Pesticides:	73	29	318	1073	548
						Hazard Index Semlvolatiles:	---	---	---	---	---
						Hazard Index Volatiles:	---	---	---	---	---
						Hazard Index TPHs:	---	---	---	---	---
						Total Hazard Index:	530	45	674	2257	1058

Notes:

1. The Screening Criteria for this exposure zone are presented In Table 9-13 and discussed in Section 9.5.
2. The Screening Criteria used to compute these hazard quotients are the "Upstream Wetland Screening Criteria" presented on Table 9-13.
3. The Screening Criteria used to compute these hazard quotients are the "Downstream Wetland Screening Criteria" presented on Table 9-13.
4. The Screening Criteria used to compute these hazard quotients are the "Southern Wetland Screening Criteria" presented on Table 9-13.

Upstream Wetland surface water grab (SW-UWG) and Southern Wetland composite (WXD1106X and WXD1107X) samples were used in toxicity tests.

Table 9-29: Risk Characterization for the Nashua River's Surface Water

Compound Name	Nashua[1] River Screening Criteria	Upstream River (WXD1113X) (SW-NRG2)	Nashua River Average	Nashua River Maximum Detected	Toxicity Sample (WXD1115X) (SW-NRG1)	Hazard Quotient			
						Upstream River[2]	Nashua River Average[3]	Nashua River Maximum[3]	Nashua River Toxicity[3]
Inorganics (ug/L)									
Aluminum	87.0	160	151	218	128	2	2	3	1
Calcium	---	15,300	15,700	16,900	15,400	---	---	---	---
Lead	1.32	---	3.61	5.93	---	---	3	4	---
Magnesium	---	2,290	2,270	2,460	2,170	---	---	---	---
Potassium	---	2,990	3,970	4,860	2,970	---	---	---	---
Sodium	---	34,700	32,900	35,700	34,600	---	---	---	---
					Hazard Index Inorganics:	2	5	7	1
					Hazard Index PCB and Pesticides:	---	---	---	---
					Hazard Index Semivolatiles:	---	---	---	---
					Hazard Index Volatiles:	---	---	---	---
					Hazard Index TPHs:	---	---	---	---
					Total Hazard Index:	2	5	7	1

Notes:
1. The Screening Criteria for this exposure zone are presented In Table 9-13 and discussed In Section 9.5.
2. The Screening Criteria used to compute these hazard quotients are the "Upstream Nashua River Screening Criteria" presented on Table 9-13.
3. The Screening Criteria used to compute these hazard quotients are the "Nashua River Screening Criteria" presented on Table 9-13.
Grab samples adjacent to (SW-NRG1) and upstream (SW-NRG2) of AOC-11 were used for toxicity tests.

TABLE 10
HUMAN HEALTH PRE EVALUATION OF SEDIMENT
SA 12 – LANDFILL NO. 8 AREA 1

SUPPLEMENTAL SITE INVESTIGATION DATA PACKAGE
FORT DEVENS, MA

ANALYTE	FREQUENCY OF DETECTION	DETECTED CONCENTRATION [a]		REGION III RESIDENTIAL SOIL CONCENTRATION (ug/g)	MCP S – 2 STANDARD (ug/g)	MAXIMUM EXCEEDS GUIDELINE CONCENTRATION ?
		AVERAGE (ug/g)	MAXIMUM (ug/g)			
SODIUM	6/6	613.167	715	NA	NA	–
VANADIUM	6/6	33.733	60.2	550	NA	–
ZINC	6/6	103.367	135	23000	2500	NO
OTHER						
TOTAL PETROLEUM HYDROCARBONS	6/6	84.8	223	NA	2500	NO

Notes:
[a] Sediment from sampling locations 12D–93–09X to 12D–93–14X.
NA = Not available
– = Not applicable
Shaded compounds exceed standard or guideline.
ug/g = micrograms per gram

TABLE 11
ECOLOGICAL PRE EVALUATION OF SEDIMENT/SURFACE SOIL - AREA 1
SA 12 - LANDFILL NO. 8

SUPPLEMENTAL SITE INVESTIGATION DATA PACKAGE
FORT DEVENS, MA

Analyte	Concentration [a]		Frequencny of Detection	Ecological Soil Benchmark (ug/g)	Maximum Exceeds Soil Benchmark?	Ecological Sediment Benchmark (ug/g)	Maximum Exceeds Sediment Benchmark?
	Average (ug//g)	Maximum (ug/g)					
ORGANICS							
4,4'-DDT	0.022	0.028	2/6	1.07	NO	0.022 [b]	YES
4,4'-DDD	0.039	0.087	4/6	1.07	NO	0.022 [b]	YES
4,4'- DDE	0.032	0.041	2/6	1.07	NO	0.022 [b]	YES
ACENAPHTHYLENE	0.094	0.094	1/6	2,600	NO	19 [b]	NO
ACETONE	0.095	0.14	3/6	2,000	NO	NA	NA
ANTHRACENE	0.069	0.069	1/6	14,000	NO	0.085	NO
BENZO(A)ANTHRACENE	0.26	0.26	1/6	8.9	NO	34.2 [b]	NO
BENZO(B)FLUORANTHENE	0.52	0.52	1/6	180	NO	NA	NA
BENZO(K)FLUORANTHENE	0.17	0.18	2/6	320	NO	NA	NA
BIS(2-ETHYLHEXYL) PHTHALATE	1.4	1.4	1/6	84	NO	120	NO
CHRYSENE	0.44	0.52	2/6	440	NO	NA	NA
DI-N-BUTYLPHTHALATE	0.348	0.9	6/6	2,650	NO	NA	NA
FLOURANTHENE	0.458	0.9	5/6	1,100	NO	49 [b]	NO
HEPTACHLOR	0.02	0.02	1/6	0.64	NO	0.003 [b]	YES
NAPHTHALENE	0.1	0.1	1/6	170	NO	0.34	NO
PHENANTHRENE	0.233	0.49	6/6	530	NO	3.61 [b]	NO
PYRENE	0.448	0.98	6/6	550	NO	34.1 [b]	NO
TOLUENE	0.003	0.003	1/6	1,800	NO	NA	NA
INORGANICS							
ALUMINUM	16,167	26,300	6/6	15,000	YES	NA	NA
ARSENIC	15.8	22	6/6	33	NO	5	YES
BARIUM	93.2	158	6/6	42.5	YES	NA	NA
BERYLLIUM	1.23	1.58	3/6	0.88	YES	NA	NA
CADMIUM	2.30	2.79	4/6	2	YES	0.8	YES
CALCIUM	1.745	2,410	6/6	NA	NA	NA	NA
CHROMIUM	47.7	62.6	6/6	180	NO	26	YES
COBALT	9.17	14.6	6/6	50	NO	NA	NA
COPPER	31.7	39	6/6	28	YES	19	YES
IRON	21.467	37.800	6/6	NA	NA	24.000	YES

TABLE 11
ECOLOGICAL PRE EVALUATION OF SEDIMENT/SURFACE SOIL - AREA 1
SA 12 - LANDFILL NO. 8

SUPPLEMENTAL SITE INVESTIGATION DATA PACKAGE
FORT DEVENS, MA

Analyte	Concentration [a]		Frequency of Detection	Ecological Soil Benchmark (ug/g)	Maximum Exceeds Soil Benchmark?	Ecological Sediment Benchmark (ug/g)	Maximum Exceeds Sediment Benchmark?
	Average (ug/g)	Maximum (ug/g)					
LEAD	64.7	96	6/6	48.4	YES	27	YES
MAGNESIUM	5,605	10,300	6/6	NA	NA	NA	NA
MANGANESE	288	553	6/6	1,500	NO	428	YES
MERCURY	0.407	0.829	6/6	3.6	NO	0.11	YES
NICKEL	25.7	43.9	6/6	35	YES	22	YES
POTASSIUM	3,050	7,230	6/6	NA	NA	NA	NA
SODIUM	613	715	6/6	NA	NA	NA	NA
VANADIUM	.337	60.2	6/6	28.7	YES	NA	NA
ZINC	103	135	6/6	640	NO	85	YES
OTHER							
TOTAL ORGANIC CARBON	25,732	60,600	6/6	- - -	- - -	- - -	- - -

Notes:
[a] Sediment samples from sampling stations 12D-93-09X through 12D-93-14X.
[b] Benchmark is carbon - normalized using site - specific total oranic carbon data (see Section 3.6.2 of ABB-ES, 1993).
NA = not available
ug/g = micrograms per gram
- - - =Analyte not a CPC for this medium

APPENDIX G - GLOSSARY OF ACRONYMS AND ABBREVIATIONS

ABB-ES	ABB Environmental Services, Inc.
AOC	Area of Contamination
ARAR	Applicable or Relevant and Appropriate Requirements
AREE	Area Requiring Environmental Evaluation
AWQC	Ambient Water Quality Criteria
bgs	below ground surface
BEHP	bis(2-ethylhexl)phthalate
BRAC	Base Realignment Closure
CERCLA	Comprehensive Environmental Response, Compensation and Liability Act
CFR	Code of Federal Regulations
CBD	Commerce Business Daily
cm/sec	centimeters per second
CMR	Code of Massachusetts Regulations
COC	contaminants of concern
CoCP	Contaminants of potential concern
cy	cubic yards
DCA	dichloroethane
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
ER-L	effects range-low
FORSCOM	US Army Forces Command
FS	Feasibility Study
HI	Hazard Index
HLA	Harding Lawson Associates
HQ	hazard quotients

GLOSSARY OF ACRONYMS AND ABBREVIATIONS

IAG	Interagency Agreement
IRP	Installation Restoration Program
MADEP	Massachusetts Department of Environmental Protection
MCL	Maximum Contaminant Level
MCP	Massachusetts Contingency Plan
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NOAA	National Oceanic and Atmospheric Administration
NPL	National Priorities List
NYSDEC	New York State Department of Environmental Conservation
O & M	operation and maintenance
PA	Preliminary Assessment
PACE	People of Ayer Concerned about the Environment
PAH	polynuclear aromatic
PCB	polychlorinated bephenyl
PCL	protective contaminant levels
POTW	Publicly-Owned Treatment Works
PRE	preliminary risk evaluation
PRG	preliminary remediation goals
RAB	Restoration Advisory Board
RfD	reference dose
RFTA	Reserve Forces Training Area
RI	remedial investigation
RME	reasonable maximum exposure
ROD	Record of Decision

SA	Study Area
SARA	Superfund Amendments and Reauthorization Act
SI	site investigation
SPIA	South Post Impact Area
SQC	sediment quality criteria
SVOC	semivolatile organic compound
TOC	total organic carbon
TCLP	Toxicity characteristic; leaching procedures
TPHC	total petroleum hydrocarbon compounds
TRC	Technical Review Committee
µg/g	micrograms per gram
µg/L	micrograms per Liter
USAEC	U.S. Army Environmental Center
USEPA	U.S. Environmental Protection Agency
VOC	volatile organic compound
WRS	Wetland Restoration Specifications