United States
Environmental Protection
Agency

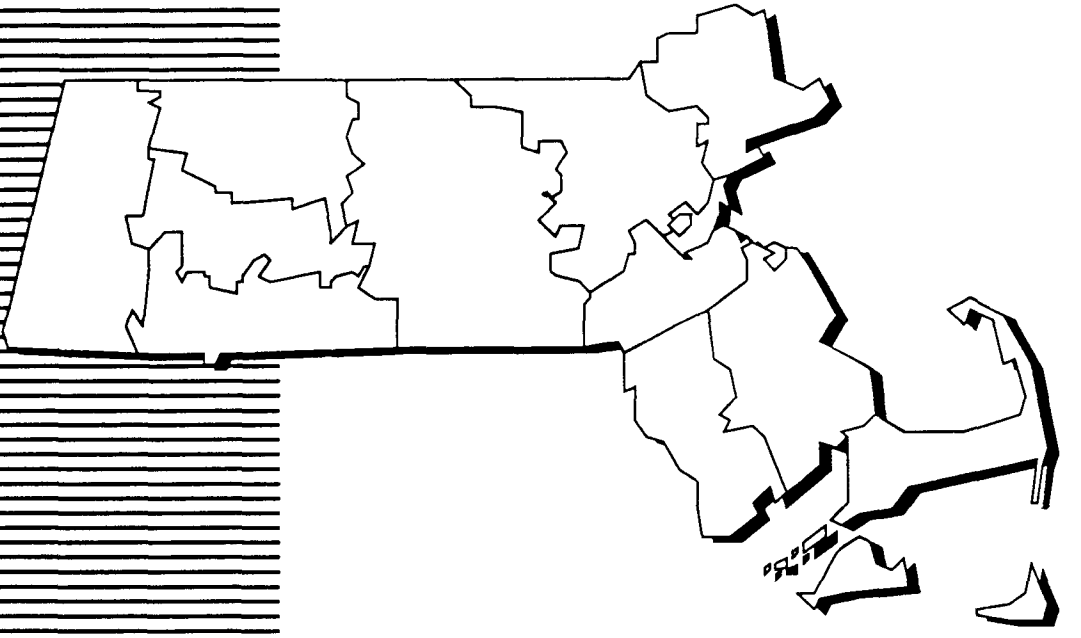
Solid Waste And
Emergency Response
(OS-240)

EPA/540/8-91/036
September 1991
PB92-963206

EPA

National Priorities List Sites:

MASSACHUSETTS



1991

Publication #9200.5-722A
September 1991

NATIONAL PRIORITIES LIST SITES:
Massachusetts

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
Office of Emergency & Remedial Response
Office of Program Management
Washington, DC 20460

If you wish to purchase copies of any additional State volumes contact:

National Technical Information Service (NTIS)
U.S. Department of Commerce
5285 Port Royal Road
Springfield, VA 22161
(703) 487-4650

The National Overview volume, **Superfund: Focusing on the Nation at Large (1991),** may be ordered as PB92-963253.

The complete set of the overview documents, plus the 49 state reports may be ordered as PB92-963253.

TABLE OF CONTENTS

A Brief Overview

WHY THE SUPERFUND PROGRAM?

As the 1970s came to a close, a series of headline stories gave Americans a look at the dangers of dumping industrial and urban wastes on the land. First there was New York's Love Canal. Hazardous waste buried there over a 25-year period contaminated streams and soil, and endangered the health of nearby residents. The result: evacuation of several hundred people. Then the leaking barrels at the Valley of the Drums in Kentucky attracted public attention, as did the dioxin-tainted land and water in Times Beach, Missouri.

In all these cases, human health and the environment were threatened, lives were disrupted, and property values were reduced. It became increasingly clear that there were large numbers of serious hazardous waste problems that were falling through the cracks of existing environmental laws. The magnitude of these emerging problems moved Congress to enact the Comprehensive Environmental Response, Compensation, and Liability Act in 1980. CERCLA — commonly known as Superfund — was the first Federal law established to deal with the dangers posed by the Nation's hazardous waste sites.

After Discovery, the Problem Intensified

Few realized the size of the problem until the Environmental Protection Agency (EPA) began the process of site discovery and site evaluation. Not hundreds, but thousands of potential hazardous waste sites existed, and they presented the Nation with some of the most complex pollution problems it had ever faced.

Since the Superfund program began, hazardous waste has surfaced as a major environmental concern in every part of the United States. It wasn't just the land that was contaminated by past disposal practices. Chemicals in the soil were spreading into the groundwater (a source of drinking water for many) and into streams, lakes, bays, and wetlands. Toxic vapors contaminated the air at some sites, while improperly disposed or stored wastes threatened the health of the surrounding community and the environment at others.

The EPA Identified More than 1,200 Serious Sites

The EPA has identified 1,245 hazardous waste sites as the most serious in the Nation. These sites comprise the National Priorities List; sites targeted for cleanup under Super-fund. But site discoveries continue, and the EPA estimates that, while some will be deleted after lengthy cleanups, this list, commonly called the NPL, will continue to grow by approximately 50 to 100 sites per year, potentially reaching 2,100 sites by the year 2000.

THE NATIONAL CLEANUP EFFORT IS MUCH MORE THAN THE NPL

From the beginning of the program, Congress recognized that the Federal government could

not and should not address all environmental problems stemming from past disposal practices. Therefore, the EPA was directed to set priorities and establish a list of sites to target. Sites on the NPL (1,245) thus are a relatively small subset of a larger inventory of potential hazardous waste sites, but they do comprise the most complex and compelling cases. The EPA has logged more than 35,000 sites on its national inventory of potentially hazardous waste sites and assesses each site within one year of being logged.

THE EPA IS MAKING PROGRESS ON SITE CLEANUP

The goal of the Superfund program is to tackle immediate dangers first and then move through the progressive steps necessary to eliminate any long-term risks to public health and the environment.

Superfund responds immediately to sites posing imminent threats to human health and the environment at both NPL sites and sites not on the NPL. The purpose is to stabilize, prevent, or temper the effects of a release of hazardous substances, or the threat of one, into the environment. These might include tire fires or transportation accidents involving the spill of hazardous chemicals. Because they reduce the threat a site poses to human health and the environment, immediate cleanup actions are an integral part of the Superfund program.

Immediate response to imminent threats is one of Superfund's most noted achievements. Where imminent threats to the public or environment were evident, the EPA has initiated or completed emergency actions that attacked the most serious threats of toxic exposure in more than 2,700 cases.

The ultimate goal for a hazardous waste site on the NPL is a permanent solution to an environmental problem that presents a serious threat to the public or the environment. This often requires a long-term effort. The EPA has aggressively accelerated its efforts to perform these long-term cleanups of NPL sites. More cleanups were started in 1987, when the Superfund law was amended, than in any previous year. By 1991, construction had started at more than four times as many sites as in 1986! Of the sites currently on the NPL, more than 500 — nearly half — have had construction cleanup activity. In addition, more than 400 more sites presently are in the investigation stage to determine the extent of site contamination and to identify appropriate cleanup remedies. Many other sites with cleanup remedies selected are poised for the start of cleanup construction activity. In measuring success by "progress through the cleanup pipeline," the EPA clearly is gaining momentum.

THE EPA MAKES SURE CLEANUP WORKS

The EPA has gained enough experience in cleanup construction to understand that environmental protection does not end when the remedy is in place. Many complex technologies — like those designed to clean up groundwater — must operate for many years in order to accomplish their objectives.

The EPA's hazardous waste site managers are committed to proper operation and maintenance of every remedy constructed. No matter who has been delegated responsibility for monitoring the cleanup work, the EPA will assure that the remedy is carefully followed and that it continues to do its job.

Likewise, the EPA does not abandon a site even after the cleanup work is done. Every five years, the Agency reviews each site where residues from hazardous waste cleanup still remain to ensure that public and environmental

health are being safeguarded. The EPA will correct any deficiencies discovered and will report to the public annually on all five-year reviews conducted that year.

CITIZENS HELP SHAPE DECISIONS

Superfund activities also depend upon local citizen participation. The EPA's job is to analyze the hazards and to deploy the experts, but the Agency needs citizen input as it makes choices for affected communities.

Because the people in a community where a Superfund site is located will be those most directly affected by hazardous waste problems and cleanup processes, the EPA encourages citizens to get involved in cleanup decisions. Public involvement and comment does influence EPA cleanup plans by providing valuable information about site conditions, community concerns, and preferences.

The State and U.S. Territories volumes and the companion National overview volume provide general Superfund background information and descriptions of activities at each NPL site. These volumes clearly describe what the problems are, what the EPA and others participating in site cleanups are doing, and how we, as a Nation, can move ahead in solving these serious problems.

USING THE STATE AND NATIONAL VOLUMES TOGETHER

To understand the big picture on hazardous waste cleanup, citizens need to hear about both environmental progress across the country and the cleanup accomplishments closer to home. Citizens also should understand the challenges involved in hazardous waste cleanup and the decisions we must make, as a Nation, in finding the best solutions.

The National overview, *Superfund: Focusing on the Nation at Large (1991)*, contains important information to help you understand the magnitude and challenges facing the Superfund program, as well as an overview of the National cleanup effort. The sections describe the nature of the hazardous waste problem nationwide, threats and contaminants at NPL sites and their potential effects on human health and the environment, vital roles of the various participants in the cleanup process, the Superfund program's successes in cleaning up the Nation's serious hazardous waste sites, and the current status of the NPL. If you did not receive this overview volume, ordering information is provided in the front of this book.

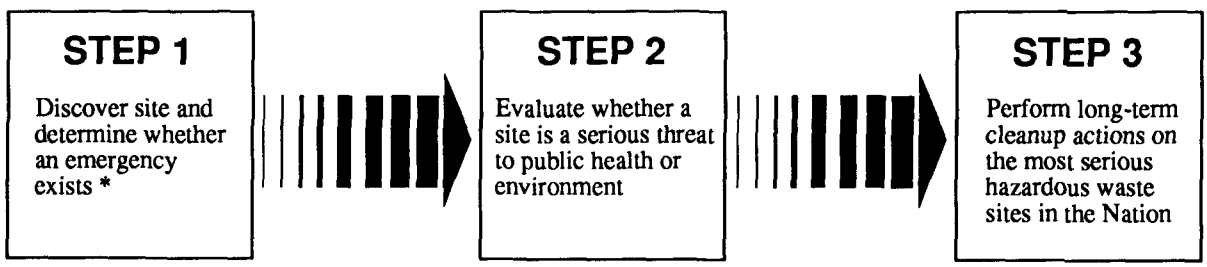
This volume compiles site summary fact sheets on each State or Territorial site being cleaned up under the Superfund program. These sites represent the most serious hazardous waste problems in the Nation and require the most complicated and costly site solutions yet encountered. Each book gives a "snapshot" of the conditions and cleanup progress that has been made at each NPL site. Information presented for each site is current as of April 1991. Conditions change as our cleanup efforts continue, so these site summaries will be updated annually to include information on new progress being made.

To help you understand the cleanup accomplishments made at these sites, this volume includes a description of the process for site discovery, threat evaluation, and long-term cleanup of Superfund sites. This description, *How Does the Program Work to Clean Up Sites?*, will serve as a reference point from which to review the cleanup status at specific sites. A glossary defining key terms as they apply to hazardous waste management and site cleanup is included as Appendix A in the back of this book.

How Does the Program Work to Clean Up Sites?

The diverse problems posed by hazardous waste sites have provided the EPA with the challenge to establish a consistent approach for evaluating and cleaning up the Nation's most serious sites. To do this, the EPA has had to step beyond its traditional role as a regulatory agency to develop processes and guidelines for each step in these technically complex site cleanups. The EPA has established procedures to coordinate the efforts of its Washington, D.C. Headquarters program offices and its front-line staff in ten Regional Offices, with the State and local governments, contractors, and private parties who are participating in site cleanup. An important part of the process is that any time during cleanup, work can be led by the EPA or the State or, under their monitoring, by private parties who are potentially responsible for site contamination.

THREE-STEP SUPERFUND PROCESS



** Emergency actions are performed whenever needed in this three-step process.*

The process for discovery of the site, evaluation of threat, and the long-term cleanup of Superfund sites is summarized in the following pages. The phases of each of these steps are highlighted within the description. The flow diagram above provides a summary of the three-step process.

Although this book provides a current "snapshot" of site progress made only by emergency actions and long-term cleanup actions at Superfund sites, it is important to understand the discovery and evaluation process that leads to identifying and cleaning up these most serious uncontrolled or abandoned hazardous

waste sites in the Nation. The discovery and evaluation process is the starting point for this summary description of Superfund involvement at hazardous waste sites.

STEP 1: SITE DISCOVERY AND EMERGENCY EVALUATION

How does the EPA learn about potential hazardous waste sites?

Site discovery occurs in a number of ways. Information comes from concerned citizens. People may notice an odd taste or foul odor in their drinking water or see half-buried leaking barrels; a hunter may come across a field where waste was dumped illegally. There may be an explosion or fire, which alerts the State or local authorities to a problem. Routine investigations by State and local governments and required reporting and inspection of facilities that generate, treat, store, or dispose of hazardous waste also help keep the EPA informed about actual or potential threats of hazardous substance releases. All reported sites or spills are recorded in the Superfund inventory (CERCLIS) for further investigation to determine whether they will require cleanup.

What happens if there is an imminent danger?

As soon as a potential hazardous waste site is reported, the EPA determines whether there is an emergency requiring an immediate cleanup action. If there is, they act as quickly as possible to remove or stabilize the imminent threat. These short-term emergency actions range from building a fence around the contaminated area to keep people away, or temporarily relocating residents until the danger is addressed, to providing bottled water to residents while their local drinking water supply is being cleaned up or physically removing wastes for safe disposal.

However, emergency actions can happen at any time an imminent threat or emergency warrants them. For example, if leaking barrels are found when cleanup crews start digging in the ground or if samples of contaminated soils or air show that there may be a threat of fire or explosion, an immediate action is taken.

STEP 2: SITE THREAT EVALUATION

If there isn't an imminent danger, how does the EPA determine what, if any, cleanup actions should be taken?

Even after any imminent dangers are taken care of, in most cases, contamination may remain at the site. For example, residents may have been supplied with bottled water to take care of their immediate problem of contaminated well water, but now it's time to determine what is contaminating the drinking water supply and the best way to clean it up. The EPA may determine that there is no imminent danger from a site, so any long-term threats need to be evaluated. In either case, a more comprehensive investigation is needed to determine if a site poses a serious, but not imminent, danger and whether it requires a long-term cleanup action.

Once a site is discovered and any needed emergency actions are taken, the EPA or the State collects all available background information not only from their own files, but also from local records and U.S. Geological Survey maps. This information is used to identify the site and to perform a preliminary assessment of its potential hazards. This is a quick review of readily available information to answer the questions:

- Are hazardous substances likely to be present?

- How are they contained?
- How might contaminants spread?
- How close is the nearest well, home, or natural resource area such as a wetland or animal sanctuary?
- What may be harmed — the land, water, air, people, plants, or animals?

Some sites do not require further action because the preliminary assessment shows that they do not threaten public health or the environment. But even in these cases, the sites remain listed in the Superfund inventory for record-keeping purposes and future reference. Currently, there are more than 35,000 sites maintained in this inventory.

If the preliminary assessment shows a serious threat may exist, what's the next step?

Inspectors go to the site to collect additional information to evaluate its hazard potential. During this *site inspection*, they look for evidence of hazardous waste, such as leaking drums and dead or discolored vegetation. They may take some samples of soil, well water, river water, and air. Inspectors analyze the ways hazardous materials could be polluting the environment, such as runoff into nearby streams. They also check to see if people (especially children) have access to the site.

How does the EPA use the results of the site inspection?

Information collected during the site inspection is used to identify the sites posing the most serious threats to human health and the environment. This way, the EPA can meet the requirement that Congress gave them to use Superfund monies only on the worst hazardous waste sites in the Nation.

To identify the most serious sites, the EPA developed the Hazard Ranking System (HRS). The HRS is the scoring system the EPA uses to assess the relative threat from a release or a potential release of hazardous substances from a site to surrounding groundwater, surface water, air, and soil. A site score is based on the likelihood that a hazardous substance will be released from the site, the toxicity and amount of hazardous substances at the site, and the people and sensitive environments potentially affected by contamination at the site.

Only sites with high enough health and environmental risk scores are proposed to be added to the NPL. That's why 1,245 sites are on the NPL, but there are more than 35,000 sites in the Superfund inventory. Only NPL sites can have a long-term cleanup paid for from Superfund, the national hazardous waste trust fund. Superfund can, and does, pay for emergency actions performed at any site, whether or not it's on the NPL.

Why are sites proposed to the NPL?

Sites proposed to the NPL have been evaluated through the scoring process as the most serious problems among uncontrolled or abandoned hazardous waste sites in the U.S. In addition, a site will be proposed to the NPL if the Agency for Toxic Substances and Disease Registry issues a health advisory recommending that people be moved away from the site. The NPL is updated at least once a year, and it's only after public comments are considered that these proposed worst sites officially are added to the list.

Listing on the NPL does not set the order in which sites will be cleaned up. The order is influenced by the relative priority of the site's health and environmental threats compared to other sites, and such factors as State priorities, engineering capabilities, and available tech-

nologies. Many States also have their own list of sites that require cleanup; these often contain sites that are not on the NPL and are scheduled to be cleaned up with State money. And, it should be noted again that any emergency action needed at a site can be performed by the Superfund, whether or not a site is on the NPL.

A detailed description of the current progress in cleaning up NPL sites is found in the section of the 1991 National overview volume entitled *Cleanup Successes: Measuring Progress.*

How do people find out whether the EPA considers a site a national priority for cleanup under the Superfund Program?

All NPL sites, where Superfund is responsible for cleanup, are described in the State and Territorial volumes. The public also can find out whether other sites, not on the NPL, are being addressed by the Superfund program by calling their Regional EPA office or the Superfund Hotline at the numbers listed in this book.

STEP 3: LONG-TERM CLEANUP ACTIONS

After a site is added to the NPL, what are the steps to cleanup?

The ultimate goal for a hazardous waste site on the NPL is a permanent, long-term cleanup. Since every site presents a unique set of challenges, there is no single all-purpose solution. A five-phase "remedial response" process is used to develop consistent and workable solutions to hazardous waste problems across the Nation:

1. *Remedial Investigation*: investigate in detail the extent of the site contamination
2. *Feasibility Study*: study the range of possible cleanup remedies
3. *Record of Decision or ROD*: decide which remedy to use
4. *Remedial Design*: plan the remedy
5. *Remedial Action*: carry out the remedy

This remedial response process is a long-term effort to provide a permanent solution to an environmental problem that presents a serious threat to the public or environment.

The first two phases of a long-term cleanup are a combined *remedial investigation and feasibility study* (RI/FS) that determine the nature and extent of contamination at the site and identify and evaluate cleanup alternatives. These studies may be conducted by the EPA or the State or, under their monitoring, by private parties.

Like the initial site inspection described earlier, a remedial investigation involves an examination of site data in order to better define the problem. However, the remedial investigation is much more detailed and comprehensive than the initial site inspection.

A remedial investigation can best be described as a carefully designed field study. It includes extensive sampling and laboratory analyses to generate more precise data on the types and quantities of wastes present at the site, the type of soil and water drainage patterns, and specific human health and environmental risks.

The result of the remedial investigation is information that allows the EPA to select the cleanup strategy that is best suited to a particular site or to determine that no cleanup is needed.

Placing a site on the NPL does not necessarily mean that cleanup is needed. It is possible for

a site to receive an HRS score high enough to be added to the NPL, but not ultimately require cleanup actions. Keep in mind that the purpose of the scoring process is to provide a preliminary and conservative assessment of *potential* risk. During subsequent site investigations, the EPA may find either that there is no real threat or that the site does not pose significant human health or environmental risks.

How are cleanup alternatives identified and evaluated?

The EPA or the State or, under their monitoring, private parties identify and analyze specific site cleanup needs based on the extensive information collected during the remedial investigation. This analysis of cleanup alternatives is called a *feasibility study*.

Since cleanup actions must be tailored exactly to the needs of each individual site, more than one possible cleanup alternative is always considered. After making sure that all potential cleanup remedies fully protect human health and the environment and comply with Federal and State laws, the advantages and disadvantages of each cleanup alternative are compared carefully. These comparisons are made to determine their effectiveness in the short and long term, their use of permanent treatment solutions, and their technical feasibility and cost.

To the maximum extent practicable, the remedy must be a permanent solution and must use treatment technologies to destroy principal site contaminants. Remedies such as containing the waste on site or removing the source of the problem (like leaking barrels) often are considered effective. Often, special pilot studies are conducted to determine the effectiveness and feasibility of using a particular technology to clean up a site. Therefore, the combined remedial investigation and feasibility study can take between 10 and 30 months to complete, depending on the size and complexity of the problem.

Does the public have a say in the final cleanup decision?

Yes. The Superfund law requires that the public be given the opportunity to comment on the proposed cleanup plan. Their concerns are considered carefully before a final decision is made.

The results of the remedial investigation and feasibility study, which also point out the recommended cleanup choice, are published in a report for public review and comment. The EPA or the State encourages the public to review the information and take an active role in the final cleanup decision. Fact sheets and announcements in local papers let the community know where they can get copies of the study and other reference documents concerning the site. Local information repositories, such as libraries or other public buildings, are established in cities and towns near each NPL site to ensure that the public has an opportunity to review all relevant information and the proposed cleanup plans. Locations of information repositories for each NPL site described in this volume are given in Appendix B.

The public has a minimum of 30 days to comment on the proposed cleanup plan after it is published. These comments can be written or given verbally at public meetings that the EPA or the State are required to hold. Neither the EPA nor the State can select the final cleanup remedy without evaluating and providing written answers to specific community comments and concerns. This "responsiveness summary" is part of the EPA's write-up of the final remedy decision, called the Record of Decision, or ROD.

The ROD is a public document that explains the cleanup remedy chosen and the reason it

was selected. Since sites frequently are large and must be cleaned up in stages, a ROD may be necessary for each contaminated resource or area of the site. This may be necessary when contaminants have spread into the soil, water, and air and affect such sensitive areas as wetlands, or when the site is large and cleaned up in stages. This often means that a number of remedies, using different cleanup technologies, are needed to clean up a single site.

If every cleanup action needs to be tailored to a site, does the design ofthe remedy need to be tailored, too?

Yes. Before a specific cleanup action is carried out, it must be designed in detail to meet specific site needs. This stage of the cleanup is called the *remedial design.* The design phase provides the details on how the selected remedy will be engineered and constructed.

Projects to clean up a hazardous waste site may appear to be like any other major construction project but, in fact, the likely presence of combinations of dangerous chemicals demands special construction planning and procedures. Therefore, the design of the remedy can take anywhere from six months to two years to complete. This blueprint for site cleanup includes not only the details on every aspect of the construction work, but a description of the types of hazardous wastes expected at the site, special plans for environmental protection, worker safety, regulatory compliance, and equipment decontamination.

Once the design is completed, how long does it take to actually clean up the site, and how much does it cost?

The time and cost for performing the site cleanup, called the *remedial action,* are as varied as the remedies themselves. In a few cases, the only action needed may be to remove drums of hazardous waste and to decontaminate them, an action that takes limited time and money. In most cases, however, a remedial action may involve different and expensive cleanup measures that can take a long time.

For example, cleaning polluted groundwater or dredging contaminated river bottoms can take several years of complex engineering work before contamination is reduced to safe levels. Sometimes the selected cleanup remedy described in the ROD may need to be modified because of new contaminant information discovered or difficulties that were faced during the early cleanup activities. Taking into account these differences, each remedial cleanup action takes an average of 18 months to complete and ultimately costs an average of $26 million to complete all necessary cleanup actions at a site .

Once the cleanup action is completed, is the site automatically "deleted" from the NPL?

No. The deletion of a site from the NPL is anything but automatic. For example, cleanup of contaminated groundwater may take up to 20 years or longer. Also, in some cases, *long-term monitoring* of the remedy is required to ensure that it is effective. After construction of certain remedies, operation and maintenance (e.g., maintenance of ground cover, groundwater monitoring, etc.), or continued pumping and treating of groundwater may be required to ensure that the remedy continues to prevent future health hazards or environmental damage and ultimately meets the cleanup goals specified in the ROD. Sites in this final monitoring or operational stage of the cleanup process are designated as "construction complete."

It's not until a site cleanup meets all the goals and monitoring requirements of the selected

remedy that the EPA can officially propose the site for *deletion* from the NPL, and it's not until public comments are taken into consideration that a site actually can be deleted from the NPL. All sites deleted from the NPL and sites with completed construction are included in the progress report found later in this book.

Can a site be taken off the NPL if no cleanup has taken place?

Yes. But only if further site investigation reveals that there are no threats present at the site and that cleanup activities are not necessary. In these cases, the EPA will select a "no action" remedy and may move to delete the site when monitoring confirms that the site does not pose a threat to human health or the environment.

In other cases, sites may be "removed" from the NPL if new information concerning site cleanup or threats show that the site does not warrant Superfund activities.

A site may be removed if a revised HRS scoring, based on updated information, results in a score below the minimum for NPL sites. A site also may be removed from the NPL by transferring it to other appropriate Federal cleanup authorities, such as RCRA, for further cleanup actions.

Removing sites for technical reasons or transferring sites to other cleanup programs preserves Superfund monies for the Nation's most pressing hazardous waste problems where no other cleanup authority is applicable.

Can the EPA make parties responsible for the contamination pay?

Yes. Based on the belief that "the polluters should pay," after a site is placed on the NPL, the EPA makes a thorough effort to identify and find those responsible for causing contamination problems at a site. Although the EPA is willing to negotiate with these private parties and encourages voluntary cleanup, it has the authority under the Superfund law to legally force those potentially responsible for site hazards to take specific cleanup actions. All work performed by these parties is closely guided and monitored by the EPA and must meet the same standards required for actions financed through the Superfund.

Because these enforcement actions can be lengthy, the EPA may decide to use Superfund monies to make sure a site is cleaned up without unnecessary delay. For example, if a site presents an imminent threat to public health and the environment or if conditions at a site may worsen, it could be necessary to start the cleanup right away. Those responsible for causing site contamination are liable under the law (CERCLA) for repaying the money the EPA spends in cleaning up the site.

Whenever possible, the EPA and the Department of Justice use their legal enforcement authorities to require responsible parties to pay for site cleanups, thereby preserving Superfund resources for emergency actions and for sites where no responsible parties can be identified.

How to Use the State Book

The site fact sheets presented in this book are comprehensive summaries that cover a broad range of information. The fact sheets describe hazardous waste sites on the NPL and their locations, as well as the conditions leading to their listing ("Site Description"). The summaries list the types of contaminants that have been discovered and related threats to public and ecological health ("Threats and Contaminants"). "Cleanup Approach" presents an overview of the cleanup activities completed, underway, or planned. The fact sheets conclude with a brief synopsis of how much progress has been made in protecting public health and the environment. The summaries also pinpoint other actions, such as legal efforts to involve polluters responsible for site contamination and community concerns.

The fact sheets are arranged in alphabetical order by site name. Because site cleanup is a dynamic and gradual process, all site information is accurate as of the date shown on the bottom of each page. Progress always is being made at NPL sites, and the EPA periodically will update the site fact sheets to reflect recent actions and will publish updated State volumes. The following two pages show a generic fact sheet and briefly describe the information under each section.

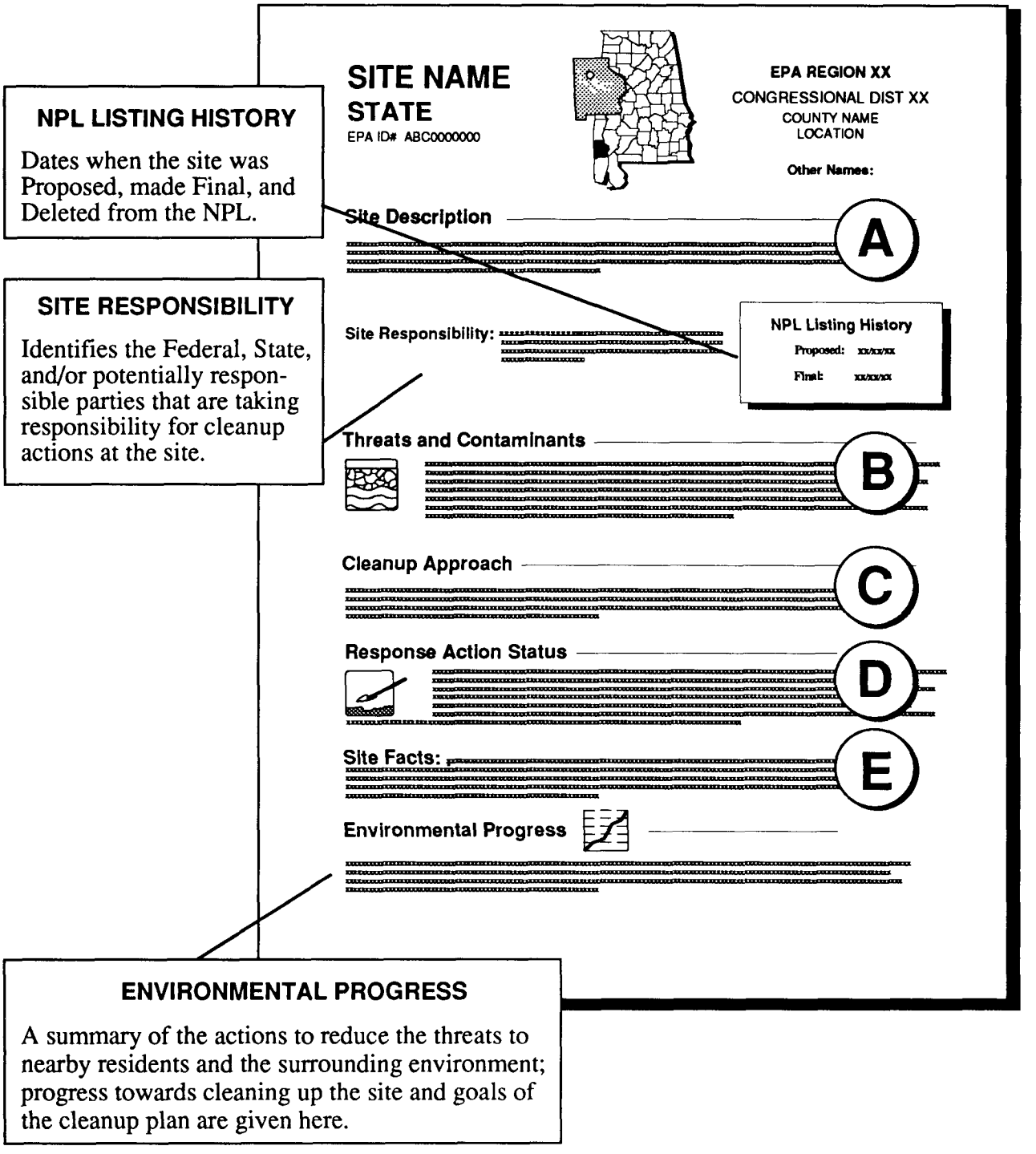
HOW CAN YOU USE THIS STATE BOOK?

You can use this book to keep informed about the sites that concern you, particularly ones close to home. The EPA is committed to involving the public in the decision making process associated with hazardous waste cleanup. The Agency solicits input from area residents in communities affected by Superfund sites. Citizens are likely to be affected not only by hazardous site conditions, but also by the remedies that combat them. Site cleanups take many forms and can affect communities in different ways. Local traffic may be rerouted, residents may be relocated, temporary water supplies may be necessary.

Definitive information on a site can help citizens sift through alternatives and make decisions. To make good choices, you must know what the threats are and how the EPA intends to clean up the site. You must understand the cleanup alternatives being proposed for site cleanup and how residents may be affected by each one. You also need to have some idea of how your community intends to use the site in the future, and you need to know what the community can realistically expect once the cleanup is complete.

The EPA wants to develop cleanup methods that meet community needs, but the Agency only can take local concerns into account if it understands what they are. Information must travel both ways in order for cleanups to be effective and satisfactory. Please take this opportunity to learn more, become involved, and assure that hazardous waste cleanup at "your" site considers your community's concerns.

THE VOLUME



NPL LISTING HISTORY

Dates when the site was Proposed, made Final, and Deleted from the NPL.

SITE RESPONSIBILITY

Identifies the Federal, State, and/or potentially responsible parties that are taking responsibility for cleanup actions at the site.

ENVIRONMENTAL PROGRESS

A summary of the actions to reduce the threats to nearby residents and the surrounding environment; progress towards cleaning up the site and goals of the cleanup plan are given here.

A

SITE DESCRIPTION

This section describes the location and history of the site. It includes descriptions of the most recent activities and past actions at the site that have contributed to the contamination. Population estimates, land usages, and nearby resources give readers background on the local setting surrounding the site.

B

THREATS AND CONTAMINANTS

The major chemical categories of site contamination are noted, as well as which environmental resources are affected. Icons representing each of the affected resources (may include air, groundwater, surface water, soil, and contamination to environmentally sensitive areas) are included in the margins of this section. Potential threats to residents and the surrounding environments arising from the site contamination also are described.

C

CLEANUP APPROACH

This section contains a brief overview of how the site is being cleaned up.

D

RESPONSE ACTION STATUS

Specific actions that have been accomplished or will be undertaken to clean up the site are described here. Cleanup activities at NPL sites are divided into separate phases, depending on the complexity and required actions at the site. Two major types of cleanup activities often are described: initial, immediate, or emergency actions to quickly remove or reduce imminent threats to the community and surrounding areas; and long-term remedial phases directed at final cleanup at the site. Each stage of the cleanup strategy is presented in this section of the summary. Icons representing the stage of the cleanup process (initial actions, site investigations, EPA selection of the cleanup remedy, engineering design phase, cleanup activities underway, and completed cleanup) are located in the margin next to each activity description.

E

SITE FACTS

Additional information on activities and events at the site are included in this section. Often details on legal or administrative actions taken by the EPA to achieve site cleanup or other facts pertaining to community involvement with the site cleanup process are reported here.

THE VOLUME

The "icons," or symbols, accompanying the text allow the reader to see at a glance which environmental resources are affected and the status of cleanup activities at the site.

Icons in the Threats and Contaminants Section

Contaminated *Groundwater* resources in the Contaminated *Groundwater* in the vicinity or underlying the site. (Groundwater is often used as a drinking water source.)

Contaminated *Surface Water and Sediments* on or near the site. (These include lakes, ponds, streams, and rivers.)

Contaminated *Air* in the vicinity of the site. (Air pollution usually is periodic and involves contaminated dust particles or hazardous gas emissions.)

Contaminated *Soil and Sludges* on or near the site. (This contamination category may include bulk or other surface hazardous wastes found on the site.)

Threatened or contaminated *Environmentally Sensitive Areas* in the vicinity of the site. (Examples include wetlands and coastal areas or critical habitats.)

Icons in the Response Action Status Section

Initial Actions have been taken or are underway to eliminate immediate threats at the site.

Site Studies at the site to determine the nature and extent of contamination are planned or underway.

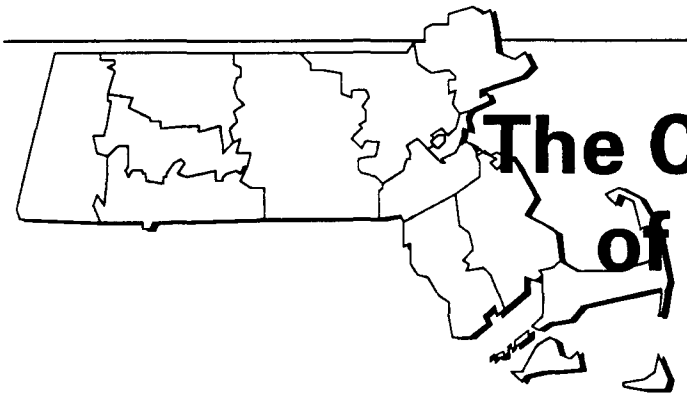
Remedy Selected indicates that site investigations have been concluded, and the EPA has selected a final cleanup remedy for the site or part of the site.

Remedy Design means that engineers are preparing specifications and drawings for the selected cleanup technologies.

Cleanup Ongoing indicates that the selected cleanup remedies for the contaminated site, or part of the site, currently are underway.

Cleanup Complete shows that all cleanup goals have been achieved for the contaminated site or part of the site.

Environmental Progress summarizes the activities taken to date to protect human health and to clean up site contamination.



The Commonwealth of Massachusetts

The New England state of Massachusetts is located on the Atlantic seaboard within EPA Region 1, which includes the six states in the northeastern corner of the United States. The state covers 58,527 square miles consisting of jagged indented coastline from Rhode Island around Cape Cod, flatlands yielding to stoney upland pastures near the central region, and gentle hilly country in the west. According to the 1990 Census, Massachusetts experienced a 5% increase in population between 1980 and 1990 and currently has approximately 6,016,000 residents, ranking 13th in U.S. populations. Principal state industries include services, trade, and manufacturing. Massachusetts manufacturers produce electric and electronic equipment, machinery, printing and publishing, instruments, and fabricated metal products.

How Many NPL Sites Are in Massachusetts?

Proposed	0
Final	25
Deleted	0
	25

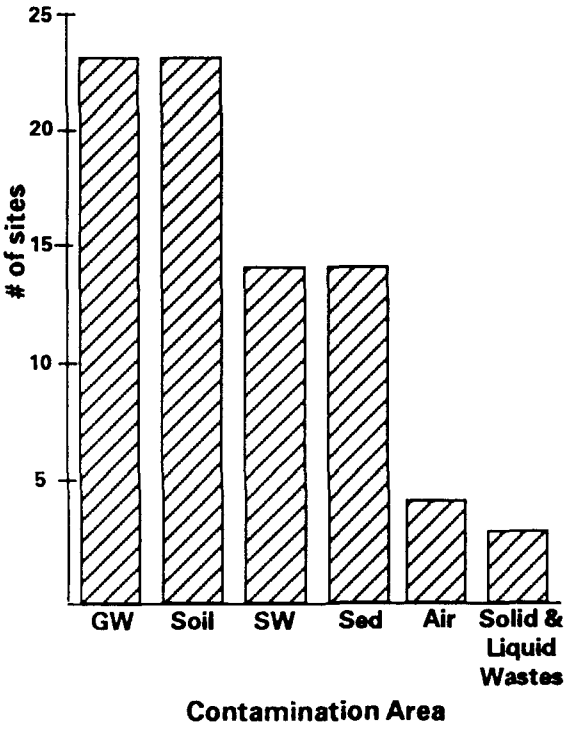
Where Are the NPL Sites Located?

Congressional Districts 1, 2, 4, 11	1 site
Congressional Districts 3, 9	2 sites
Congressional Districts 6, 7	3 sites
Congressional Districts 5	5 sites
Congressional Districts 10	6 sites

What Type of Sites Are on the NPL in Massachusetts?

# of sites	type of sites
4	Chemical & Allied Products
3	Electronics & Electrical Equipment
3	Municipal & Industrial Landfills
3	Federal Facilities
2	Storage Facilities
2	Metals & Allied Products
8	Others (Lumber & Wood, recyclers, disposal facility, petroleum refining and related industry, manufacturers)

How Are Sites Contaminated and What Are the Principal* Chemicals?



Groundwater: Volatile organic compounds (VOCs), heavy metals (inorganics), and polychlorinated biphenyls (PCBs).

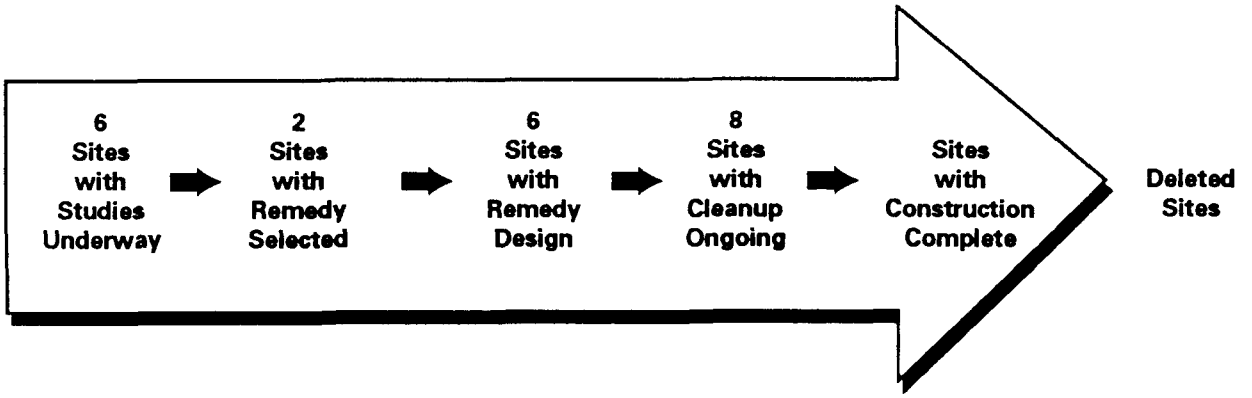
Soil, Solid, and Liquid Wastes: Heavy metals (inorganics), volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), and creosote (organics).

Surface Water and Sediments: Heavy metals (inorganics), volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), and creosote (organics).

Air: Volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), and gases.

*Appear at 20% or more sites

Where Are the Sites in the Superfund Cleanup Process?†



In addition to the activities described above, initial actions have been taken at 21 sites as interim cleanup measures.

†Cleanup status reflects phases of site activities rather than administrative accomplishments.

Progress To Date

The following Progress Report lists all sites currently on, or deleted from, the NPL and briefly summarizes the status of activities for each site at the time this report was prepared. The steps in the Superfund cleanup process are arrayed across the top of the chart, and each site's progress through these steps is represented by an arrow (⇨) indicating the current stage of cleanup.

Large and complex sites often are organized into several cleanup stages. For example, separate cleanup efforts may be required to address the source of the contamination, hazardous substances in the groundwater, and surface water pollution, or to clean up different areas of a large site. In such cases, the chart portrays cleanup progress at the site's *most advanced* stage, reflecting the status of site activities rather than administrative accomplishments.

- An arrow in the "Initial Response" category indicates that an emergency cleanup or initial action has been completed or currently is underway. Emergency or initial actions are taken as an interim measure to provide immediate relief from exposure to hazardous site conditions or to stabilize a site to prevent further contamination.

- A final arrow in the "Site Studies" category indicates that an investigation to determine the nature and extent of the contamination at the site currently is ongoing.

- A final arrow in the "Remedy Selection" category means that the EPA has selected the final cleanup strategy for the site. At the few sites where the EPA has determined that initial response actions have eliminated site contamination, or that any remaining contamination will be naturally dispersed without further cleanup activities, a "No Action" remedy is selected. In these cases, the arrows are discontinued at the "Remedy Selection" step and resume in the "Construction Complete" category.

- A final arrow at the "Remedial Design" stage indicates that engineers currently are designing the technical specifications for the selected cleanup remedies and technologies.

- A final arrow in the "Cleanup Ongoing" column means that final cleanup actions have been started at the site and currently are underway.

- A final arrow in the "Construction Complete" category is used only when all phases of the site cleanup plan have been performed, and the EPA has determined that no additional construction actions are required at the site. Some sites in this category currently may be undergoing long-term operation and maintenance or monitoring to ensure that the cleanup actions continue to protect human health and the environment.

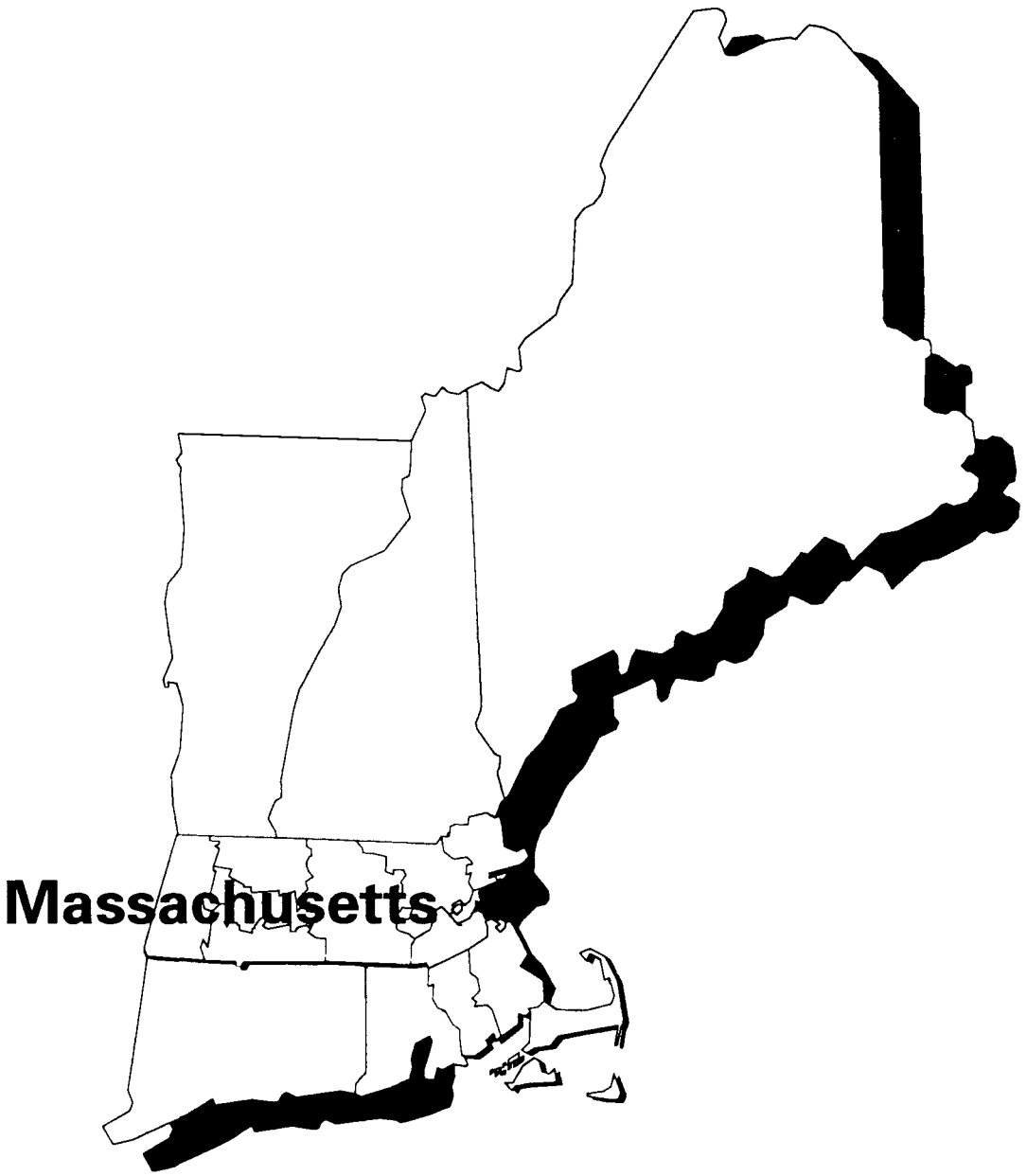
- A check in the "Deleted" category indicates that the site cleanup has met all human health and environmental goals and that the EPA has deleted the site from the NPL.

Further information on the activities and progress at each site is given in the site "Fact Sheets" published in this volume.

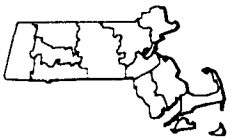
Progress Toward Cleanup at NPL Sites in the Commonwealth of Massachusetts

Page	Site Name	County	NPL	Date	Initial Response	Site Studies	Remedy Selected	Remedy Design	Cleanup Ongoing	Construction Complete	Deleted
23	ATLAS TACK CORP.	BRISTOL	Final	02/21/90		⇨					
25	BAIRD & MCGUIRE	NORFOLK	Final	09/09/83	⇨	⇨	⇨	⇨	⇨		
29	CANNON ENGINEERING CORP. (CEC)	PLYMOUTH	Final	09/01/83	⇨	⇨	⇨	⇨	⇨		
33	CHARLES-GEORGE RECLAMATION TRUST LANDFILL	MIDDLESEX	Final	09/01/83	⇨	⇨	⇨	⇨	⇨		
37	FORT DEVENS - SUDBURY TRAINING	MIDDLESEX	Final	02/16/90	⇨						
39	FORT DEVENS	WORCESTER	Final	11/15/89							
41	GROVELAND WELLS	ESSEX	Final	09/01/83	⇨	⇨	⇨	⇨			
43	HAVERHILL MUNICIPAL LANDFILL	ESSEX	Final	06/10/86	⇨						
45	HOCOMONCO POND	WORCESTER	Final	09/01/83		⇨	⇨	⇨	⇨		
47	INDUSTRI-PLEX	MIDDLESEX	Final	09/01/83	⇨	⇨	⇨	⇨			
49	IRON HORSE PARK	MIDDLESEX	Final	09/21/84	⇨	⇨	⇨	⇨			
51	NEW BEDFORD SITE	BRISTOL	Final	09/01/83	⇨	⇨	⇨	⇨			
53	NORWOOD PCBS	NORFOLK	Final	06/01/86	⇨	⇨	⇨	⇨			
55	NYANZA CHEMICAL WASTE DUMP	MIDDLESEX	Final	09/08/83	⇨	⇨	⇨	⇨	⇨		
57	OTIS AIR NAT. GUARD BASE/ CAMP EDWARDS	BARNSTABLE	Final	11/15/89	⇨	⇨					
61	PLYMOUTH HARBOR/CANNON ENGINEERING CORP.	PLYMOUTH	Final	09/01/83	⇨	⇨	⇨	⇨	⇨		
63	PSC RESOURCES	HAMPDEN	Final	09/01/83	⇨	⇨					
65	RE-SOLVE, INC.	BRISTOL	Final	09/01/83	⇨	⇨	⇨	⇨	⇨		
69	ROSE DISPOSAL PIT	BERKSHIRE	Final	06/01/86	⇨	⇨	⇨	⇨			
71	SALEM ACRES	ESSEX	Final	06/01/86	⇨	⇨					
73	SHPACK LANDFILL	BRISTOL	Final	06/01/86		⇨					
75	SILRESIM CHEMICAL CORP.	MIDDLESEX	Final	09/01/83	⇨	⇨					
77	SULLIVAN'S LEDGE	BRISTOL	Final	09/01/84	⇨	⇨	⇨				
79	W. R. GRACE & CO., INC. (ACTON PLANT)	MIDDLESEX	Final	09/08/83	⇨	⇨	⇨	⇨	⇨		
81	WELLS G&H	MIDDLESEX	Final	09/01/83	⇨	⇨	⇨				

Summary of Site Activities



EPA REGION 1

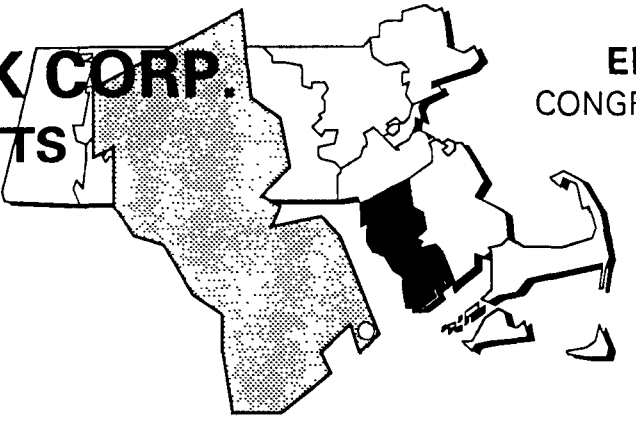


Who Do I Call with Questions?

The following pages describe each NPL site in Massachusetts, providing specific information on threats and contaminants, cleanup activities, and environmental progress. Should you have questions, please call the EPA's Region 1 Office in Boston, Massachusetts or one of the other offices listed below:

EPA Region 1 Superfund Community Relations Office	(617) 565-3425
EPA Region 1 Superfund Office	(617) 577-9645
EPA Superfund Hotline	(800) 424-9346
EPA Headquarters Public Information Center	(202) 260-2080
Massachusetts Superfund Office	(617) 292-5851

ATLAS TACK CORP.
MASSACHUSETTS
EPA ID# MAD001026319



EPA REGION 1
CONGRESSIONAL DIST. 10
Bristol County
Fairhaven

Site Description

The Atlas Tack Corporation formerly manufactured cut and wire tacks, steel nails, and similar items on a 12-acre site in Fairhaven. From the 1940s until the late 1970s, wastes containing cyanide and heavy metals, including high levels of arsenic, were discharged into an unlined acid neutralizing lagoon approximately 200 feet east of the manufacturing building and adjacent to a saltwater tidal marsh in Buzzards Bay Estuary. The area is residential and commercial. Approximately 7,200 people live within 1 mile, and 15,150 live within 3 miles of the site.

Site Responsibility: The site is being addressed through Federal actions.

NPL LISTING HISTORY
Proposed Date: 06/21/88
Final Date: 02/21/90

Threats and Contaminants

The groundwater has been shown to be contaminated with cyanide and toluene that leached from the site lagoons. The on-site soil is contaminated with volatile organic compounds (VOCs), including toluene and ethyl benzene, as well as heavy metals, including beryllium, mercury, and nickel. Nearby residents risk potential exposure through direct contact with the soil or by drinking water from contaminated wells. The marsh south of the lagoon and estuarine areas in Buzzards Bay are contaminated.

Cleanup Approach

The site is being addressed in a single long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Entire Site: The EPA currently is conducting an investigation into the nature and extent of the contamination at the site. The EPA site investigation will define the contaminants of concern, and alternatives for the final cleanup will be presented when the investigation is completed, scheduled in 1992.

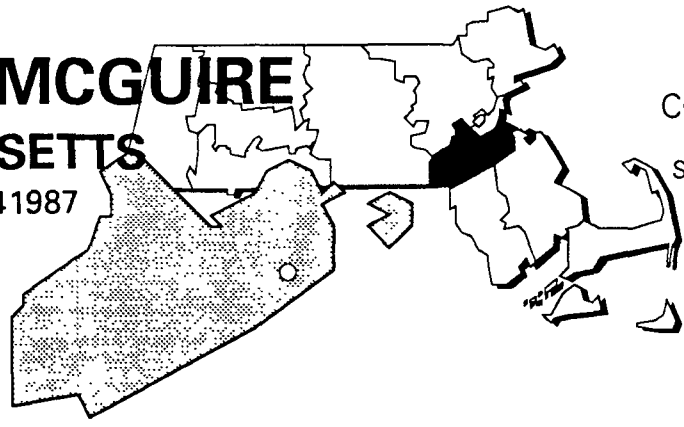
Environmental Progress

The EPA has determined that the public and the environment are not at immediate risk while studies at the Atlas Tack Corp. site are being conducted and the final cleanup alternatives are being determined.

BAIRD & MCGUIRE

MASSACHUSETTS

EPA ID# MAD001041987



EPA REGION 1
CONGRESSIONAL DIST. 11
Norfolk County
South Street in northwest Holbrook

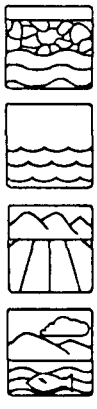
Site Description

The Baird & McGuire facility is situated on a 20-acre site in Holbrook and operated as a chemical mixing and batching company from 1912 to 1983. Later activities included mixing, packaging, storing, and distributing various products, including pesticides, disinfectants, soaps, floor waxes, and solvents. Some of the raw materials used at the site were stored in a tank farm and piped to the laboratory or mixing buildings. Other raw materials were stored in drums on site. Waste disposal methods at the site included direct discharge into the soil, a nearby brook, wetlands, and a former gravel pit. Hazardous wastes historically were disposed of in an on-site lagoon and cesspool. Also included on site were two lagoons open to rain and large areas of buried wastes such as cans, debris, and lab bottles and hundreds of bottles of chemicals. The lagoon area has been capped with clay. The on-site buildings were in various states of disrepair and unsecured; the EPA has since demolished all but one of the buildings and the tank farms. The tank farm area has been temporarily capped. The site is completely fenced and has an operating groundwater recirculation system to contain the groundwater plume. The site is 500 feet west of the Cochato River, which was diverted into the Richardi Reservoir, a water system serving nearly 90,000 people in the towns of Holbrook, Randolph, and Braintree. Currently, the Cochato River is not being used as a supply source for the Richardi Reservoir. The South Street well field, part of the municipal water supply for Holbrook, is within 1,500 feet of the site and was shut down in 1982.

Site Responsibility: The site is being addressed through a combination of Federal, State, and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 12/01/82
Final Date: 09/08/83

Threats and Contaminants



The groundwater is contaminated with pesticides and organic and inorganic chemicals. Studies found significant levels of volatile organic compounds (VOCs), other organic compounds, arsenic, and pesticides including DDT and chlordane in the Cochato River sediments. The contamination is highest on site or within approximately 500 feet downgradient of the current site fence. Site soils were found to be contaminated with VOCs, polycyclic aromatic hydrocarbons (PAHs), other organic compounds, pesticides, dioxin, and heavy metals such as lead and arsenic. Dioxin also has been detected in area wetland soils. The last operating well in the South Street well field was shut down in 1982 because of unacceptably high levels of organic contamination. The area of the site is fenced; however, high levels of pesticides in site soils and sporadic dioxin

contamination pose an imminent threat to human health through accidental ingestion of or direct contact with the contaminated soils or groundwater. The groundwater plume continues to contaminate the Cochato River sediments; however, no significant health risk was found, based on human contact with contaminated sediments. Contaminated sediments were found to be acutely toxic to aquatic life.

Cleanup Approach

The site is being addressed in five stages: immediate actions and four long-term remedial phases addressing the cleanup of the groundwater, soil, and sediments and the provision of an alternate water supply.

Response Action Status

Immediate Actions: The EPA completed a hydrological study in connection with this site. The initial response action taken included the removal of 1,020 cubic yards of hazardous waste, 1 ton of waste creosote, 25 gallons of waste coal tar, 155 pounds of solid hazardous waste, 47 drums of flammable liquids and solids, and 2 drums of corrosives. Additional activity included construction of a clay cap, installation of a groundwater interception/recirculation system, installation of 5,700 feet of fencing, and extensive soil, groundwater, surface water, and air sampling. The site was graded, capped, and seeded. The site is secured by a fence to limit contact with contaminants.

Groundwater: This remedy involves pumping groundwater and treating it at an on-site treatment plant. Treated groundwater will be discharged to the aquifer located on site. On- and off-site groundwater monitoring will be implemented. A groundwater interception/recirculation system currently operating at the site has significantly reduced the migration of site contaminants.

Soil: This remedy involves the excavation and removal of approximately 130,000 cubic yards of contaminated soils and destruction of contaminants in the soil by incineration. Wetlands will be restored where contaminated soils are excavated. The unnamed brook will be relocated. Air quality will be monitored during construction and implementation of the incineration system. Design of the incineration system is continuing, and a series of tests to determine the operating procedures that will most effectively destroy soil contaminants was completed in 1989 at the EPA's research facility in Arkansas. Cleanup of the site started in 1990 and is scheduled to be completed in 1997.

Sediments: The groundwater discharge is believed to be partially responsible for contamination of Cochato River sediments and adjoining wetlands. Field investigations in 1987 and 1988 determined that contaminated groundwater and surface runoff from the site continue to be the principal sources of contamination of the wetlands adjacent to the site. The EPA conducted an investigation into the nature and extent of the surface water and sediment

contamination at the site. The investigation defined the contaminants of concern and recommended alternatives for final surface water and sediment cleanup. The investigation also determined that site contaminants were being effectively trapped in river sediments and were not migrating down-river. The investigation was completed in late 1989. Approximately 1,500 cubic yards of sediments will be excavated and incinerated on site. Design of cleanup actions is scheduled to be completed in 1991, with work scheduled to begin in 1994.

Water Supply: In 1990, the EPA selected a remedy that will reactivate the Donna Road Aquifer, thereby replacing the lost demand caused by contamination. The design of this remedy is scheduled to start on 1991.

Site Facts: Between 1954 and 1977, the company was fined at least 35 times by various State and Federal agencies for numerous violations. A citizen complaint of an oily substance on the Cochato River initiated a site inspection, which reported surface water, groundwater, and wetlands contamination. In 1983, the City of Holbrook revoked Baird & McGuire's permit to store chemicals and ordered it to dismantle the existing storage facilities. The EPA issued Notice Letters to parties potentially responsible for the site contamination. A cost recovery case against the four potentially responsible parties was filed in 1983. The case was settled on an ability-to-pay basis in 1987. A final Consent Decree was issued by the EPA and was signed by the potentially responsible parties.

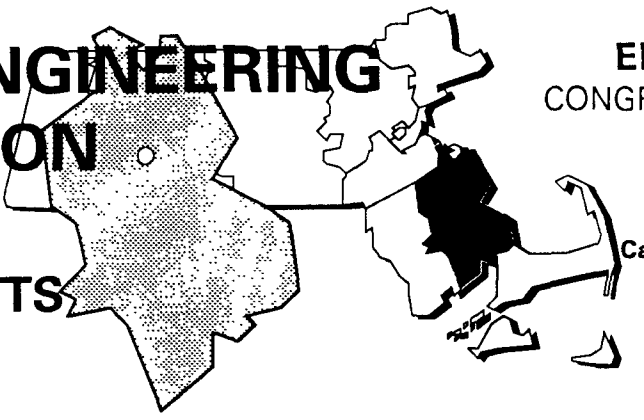
Environmental Progress

The initial cleanup, including the construction of a fence, and continuing actions described above have greatly reduced the potential of exposure to contamination and continue to reduce contamination levels at the Baird & McGuire site, making the area safer while it awaits final cleanup activities.

CANNON ENGINEERING CORPORATION (CEC)

MASSACHUSETTS

EPA ID# MAD079510780



EPA REGION 1
CONGRESSIONAL DIST. 09
Plymouth County
Bridgewater

Other Names:
Cannons Bridgewater
Superfund Site

Site Description

The Cannon Engineering Corporation (CEC) site is situated on 6 acres between Route 24 and First Street in Bridgewater. In 1974, Cannon developed the site to transport, store, and incinerate hazardous wastes, but the facility currently is inactive. On-site structures included 21 storage tanks, 3 buildings, an office/warehouse, and an incinerator. The operation was licensed in 1979 to store motor oils, oils and emulsions, solvents, lacquers, organic and inorganic chemicals, plating waste, clay and filter media containing chemicals, plating sludge solids, and pesticides. The facility had a license to operate from 1974 until 1980, when alleged waste handling and reporting violations prompted the Massachusetts Executive Office of Environmental Affairs (EOEA) to revoke it. The facility was placed in receivership when its owners were found guilty of illegal storage and disposal. Operations ceased in 1980, leaving behind about 700 drums and 155,000 gallons of liquid waste and sludge in bulk storage. The on-site soils, sediments, buildings, groundwater, and surface waters are contaminated with volatile organic compounds (VOCs), polychlorinated biphenyls (PCBs), polycyclic aromatic hydrocarbons (PAHs), pesticides, and metals to varying degrees. The Cannon site is associated with three other NPL sites: Tinkham Garage, Sylvester, and Plymouth Harbor. The Tinkham Garage and Sylvester sites are located in New Hampshire. Approximately 1,000 people live within 1 mile in this residential and light industrial area. The nearest residence is 1/8 mile from the site. There are 13 homes within a 1-mile radius that depend on well water. The closest municipal well is in Raynham, 1 mile from the site. Bridgewater's municipal wells are 3 miles to the east of the site.

Site Responsibility: The site is being addressed through Federal, State, and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 12/01/82
Final Date: 09/01/83

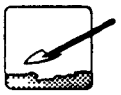
Threats and Contaminants

The on-site air contains trace amounts of VOCs including benzene and methylene chloride. Groundwater also has been found to contain VOCs including toluene, as well as heavy metals. Soil and sediments contain PAHs, PCBs, dioxin, and pesticides in addition to VOCs and heavy metals. The surface water is polluted with heavy metals including high levels of iron, selenium, lead, manganese, and silver. Direct contact with and accidental ingestion of contaminated material posed a potential human threat. Inhaling VOCs and contaminated fugitive dust are potential health threats. The site is fully fenced to reduce the potential for contact with contaminants. Sensitive areas that could be subject to contamination associated with the site include wetland areas to the south and Lake Nippenicket to the west of the site.

Cleanup Approach

This site is being addressed in two stages: initial actions and a long-term remedial phase concentrating on source control and migration of contaminants at the entire site.

Response Action Status



Initial Actions: In 1982, the State removed 155,000 gallons of sludge and liquid wastes and approximately 700 drums and incinerated the materials off site. In 1988, the EPA and the parties potentially responsible for the site contamination provided for the removal and disposal of numerous hazardous materials abandoned at the site. A fence surrounding the site was erected in 1989.

Entire Site: The remedy for the site was selected in 1988 and entails two cleanup phases, source control and restricting the migration of contaminants. Source control elements include: (1) fencing the area to restrict access to soils; (2) treating certain contaminated soil on site by heating it to remove contaminants and burning PCB-contaminated soils off site; (3) installing a groundwater monitoring system; (4) decontaminating and removing buildings and associated structures; (5) sampling and treating other soils as necessary; and (6) restorating wetlands disturbed during site cleanup. Key features of the migration control remedy include restricting use of groundwater at the site and installing additional groundwater monitoring wells to keep apprised of the appearance or movement of contaminants. Once contaminated soils are removed, aggravating conditions will abate and groundwater will clear naturally over time. In 1990, cleanup activities were undertaken by the parties potentially responsible for site contamination, with oversight from the EPA and the State. Four hundred tons of PCB-contaminated soil were incinerated off site, 11,330 tons of soils containing VOCs were treated on site, 1,200 tons of steel and 1,300 tons of concrete were shipped for recycling, 360 cubic yards of hazardous debris

were sent to an approved disposal facility, and 480 cubic yards of non-hazardous debris were shipped to a demolition materials landfill. Long-term groundwater monitoring is scheduled to begin in 1991. The testing for dioxin of debris from the demolished incinerator and subsequent removal also are scheduled for 1991.

Site Facts: A Consent Decree was entered by the U.S. District Court in Boston in 1989 for the potentially responsible parties to conduct engineering designs and cleanup actions at the site.

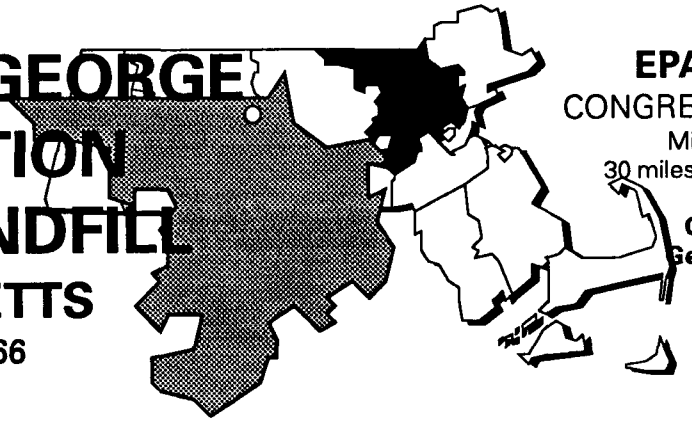
Environmental Progress 

The initial cleanup actions described above have removed contaminated materials from the site and have restricted site access, reducing the risk of exposure to hazardous substances at the Cannon Engineering Corp. site, thereby making it safer while further cleanup activities are undertaken. All direct contact threats from contaminated soil have been eliminated. The planned cleanup activities will reduce movement of contaminants off site as well as remove materials that are causing pollution.

CHARLES-GEORGE RECLAMATION TRUST LANDFILL

MASSACHUSETTS

EPA ID# MAD003809266



EPA REGION 1
CONGRESSIONAL DIST. 05
Middlesex County
30 miles northwest of Boston

Other Names:
George C Landfill

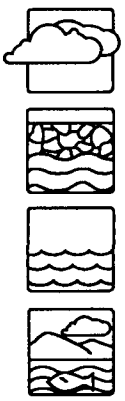
Site Description

From the late 1950s until 1967, the Charles-George Reclamation Trust Landfill, located 1 mile southwest of Tyngsborough and 4 miles south of Nashua, NH, was a small municipal dump. A new owner expanded it to its present size of approximately 55 acres and accepted both household and industrial wastes from 1967 to 1976. The facility had a license to accept hazardous waste from 1973 to 1976 and primarily accepted drummed and bulk chemicals containing volatile organic compounds (VOCs) and toxic metal sludges. Records show that over 1,000 pounds of mercury were disposed of and approximately 2,500 cubic yards of chemical wastes were landfilled. The State ordered closure of the site in 1983. That same year, the EPA listed the site on the NPL and the owner filed for bankruptcy. Samples from wells serving nearby Cannongate Condominiums and some nearby private homes revealed VOCs and heavy metals in the groundwater. Approximately 500 people live within a mile of the site in this residential/rural area; 2,100 live within 3 miles. The nearest residents are 100 yards away. The site is bordered by Flint Pond Marsh and Flint Pond to the east, Dunstable Brook to the west, and the condo complex to the southeast. Seasonal livestock grazing occurs in the area.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 10/01/81
Final Date: 09/01/83

Threats and Contaminants



The air on the site is contaminated with VOCs including benzene and vinyl chloride. Benzene, tetrahydrofuran, arsenic, and 2-butanone have been detected in the groundwater. Domestic wells contained benzene. Sediments have been shown to contain low levels of benzo(a)pyrene. People face a potential health threat by drinking contaminated groundwater or inhaling landfill gas on the site. Flint Pond Marsh, Flint Pond, and Dunstable Brook are nearby wetlands threatened by contamination migrating from the site.

Cleanup Approach

The site is being addressed in five stages: initial actions and four long-term remedial phases focusing on providing an alternate water supply, capping the site, controlling the migration of contaminants, and treating leachate in the groundwater.

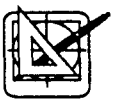
Response Action Status

Initial Actions: In response to the discovery of contaminated well water in the adjacent condominium complex in 1983, the EPA installed an insulated aboveground pipeline to supply residents with an alternate water supply. In 1983 and 1984, the EPA installed a security fence and 12 gas vents, and the site was regraded to cover exposed refuse.

Water Supply: At the end of 1983, the EPA approved a remedy that would provide a permanent water supply to the affected residents. With EPA funds, the U.S. Army Corps of Engineers installed 4 miles of ductile iron water pipe, constructed a pump station and water storage tank, and arranged for chlorination services. This project was completed in 1988.

Capping: In 1985, the EPA completed a study on capping the landfill and selected the following remedy: (1) installation of a full synthetic membrane cover and a surface water diversion and collection system, which will keep rainwater from spreading contamination; (2) construction of a gas collection system venting to the atmosphere; and (3) creation of a leachate collection system around the entire site. Periodic mowing, landscaping, and inspection/maintenance services also will be provided. The Corps of Engineers completed construction of the full synthetic landfill cap in 1990.

Migration of Contaminants: In 1988, the EPA selected a remedy to restrict the movement of contaminants off site. Features include: (1) pumping contaminated shallow groundwater and treating it biologically, along with the leachate collected from the landfill cap system; (2) collecting and incinerating gas vented from the landfill; (3) excavating and solidifying 500 cubic yards of contaminated sediments from Dunstable Brook and placing them under the landfill cap; and (4) groundwater monitoring. The Corps of Engineers completed the remedy design in 1990. Construction of the gas treatment system and one of two groundwater extraction remedies is scheduled to begin in 1991.



Leachate: This remedy involves extraction of a contaminated groundwater plume in the eastern portion of the site and combining it with leachate collected from the landfill cap system for treatment. A biologically based cleanup technology will be used. The parties potentially responsible for contamination of the site are performing groundwater and leachate monitoring as part of their cleanup agreement with the EPA. The parties also are performing groundwater treatability studies to be incorporated in the Corps' design documents. Cleanup actions are scheduled to begin in 1993.

Site Facts: In May 1983, the EPA issued a Notice Letter to the Charles-George Reclamation Trust, requesting its cooperation in the cleanup. An Administrative Order was signed with the potentially responsible parties to perform treatability studies and groundwater/leachate monitoring with assistance from the EPA.

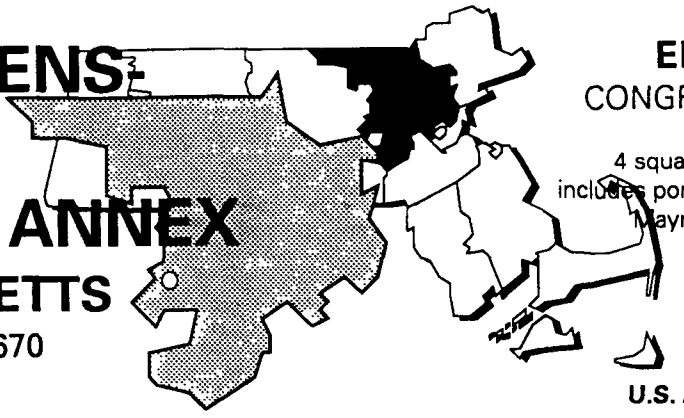
Environmental Progress 

Providing a water supply system, installing a fence, capping the landfill area, and controlling the spread of leachate have provided a safe drinking water source and reduced the potential for exposure to hazardous materials at the Charles-George Reclamation Trust Landfill site, making the site safer while it awaits further cleanup activities.

FORT DEVENS-SUDBURY TRAINING ANNEX

MASSACHUSETTS

EPA ID# MAD980520670



EPA REGION 1

CONGRESSIONAL DIST. 05

Middlesex County

4 square miles in Middlesex Co.

includes portions of the towns of Sudbury, Maynard, Hudson, and Stow

Other Names:
Waste Area 7
Waste Area 9
PCB Spill
U.S. Army Natick R&D Labs
Sudbury Annex

Site Description

The Fort Devens-Sudbury Training Annex is a U.S. Army military installation occupying over 4 square miles in Middlesex County and includes portions of the towns of Sudbury, Maynard, Hudson, and Stow. Established in the early 1940s, the Annex has served variously as an ammunition depot, an ordnance test station, and a troop training and laboratory disposal center. It is now under the custody of Fort Devens, 12 miles to the northeast, a site also listed on the NPL in 1989. The Army has identified 11 potentially contaminated areas on the site containing explosive residues, chemical laboratory wastes, oil lubricants, and other toxic materials. In 1985, 100 to 200 gallons of oil containing polychlorinated biphenyls (PCBs) spilled from an out-of-service transformer in a remote abandoned area of the Annex. Four other electrical transformer units in a remote section of the Annex were found with bullet holes and dents that had permitted PCB-containing fluids to escape. In 1986, monitoring wells downgradient from Waste Areas A7 and A9 were reported to be contaminated with trichloroethane and benzene. Area A7 is a 20-acre gravel pit used from the 1940s to the 1980s as a laboratory dump, an all-purpose dump, and a burning ground. Area A9 is a 7-acre parcel used by the State since the 1950s for fire training. The two areas are separated by an unnamed tributary of the Assabet River. White Pond, which provides water to 12,000 residents of Maynard, is within 3 miles downstream of Waste Area A5, a 70-square-foot pit where laboratory solvents were buried from 1973 to 1979. Approximately 35,700 people obtain drinking water from public and private wells within 3 miles of the waste areas. A private well is 1,600 feet from the waste areas. The area is mainly agricultural, with interspersed residential areas. A freshwater wetland is within 600 feet of the pond.

Site Responsibility: The site is being addressed through Federal actions.

NPL LISTING HISTORY
Proposed Date: 07/14/89
Final Date: 02/16/90

Threats and Contaminants

The groundwater is contaminated with volatile organic compounds (VOCs), including benzene from chemical lab wastes and oils. The soil is contaminated with PCBs. People in the area are at potential risk from contaminated private and municipal wells and through direct contact with contaminated soil. Nearby freshwater wetlands could be subject to contamination from the site. Puffer Pond, located along the northern boundary of the site, is being considered for recreational development.

Cleanup Approach

The site is being addressed in five stages: initial actions and four long-term remedial phases addressing cleanup of the groundwater (Waste Areas A7 and A9), the PCB spill area, and additional contamination areas.

Response Action Status

Initial Actions: The Army responded to the 1985 PCB spill by removing 300 gallons of Aroclor and approximately 86 tons of PCB-contaminated soil to an EPA-approved facility. Workers similarly removed the four additional transformers discovered, along with some contaminated soil around them.

Groundwater (Waste Area A7): The Army is scheduled to begin an in-depth study of groundwater contamination in Waste Area A7 in 1991. Recommended remedies for cleanup are expected to be available by 1993.

Groundwater (Waste Area A9): The Army is scheduled to begin an in-depth study of groundwater contamination in Waste Area A9 in 1991. Recommended remedies for cleanup are expected to be available by 1993.

PCB Spill Area: The Army is scheduled to conduct a detailed study of groundwater and soil contamination in the PCB spill area in late 1991. Findings and recommended cleanup remedies are expected to be ready in 1993.

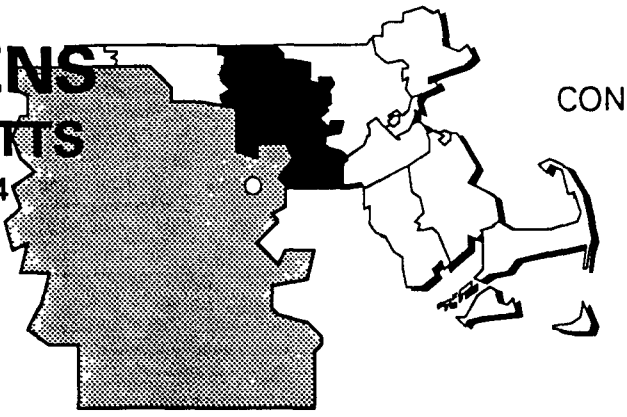
Additional Contamination Areas: The Army is scheduled to study the nature and extent of contamination and will develop proposed cleanup alternatives at numerous additional areas of the site, beginning in 1991. A detailed investigation will be performed at several areas of the site to determine if a more thorough evaluation of remedies is necessary.

Site Facts: An Interagency Agreement between the EPA and the Army will be signed soon, outlining the legal framework for the site cleanup. The Sudbury Training Annex is participating in the Installation Restoration Program, a specially funded program established by the Department of Defense (DoD) in 1978 to identify, investigate, and control the migration of hazardous contaminants at military and other DoD facilities.

Environmental Progress

Initial activities have removed sources of contamination, reducing the potential for exposure to hazardous materials at the Fort Devens-Sudbury Training Annex site. The EPA has addressed the actions taken by the Army and has determined that there are no immediate threats to public health and the environment. Some immediate actions may be deemed necessary, based on the site investigation, while the site awaits further cleanup activities.

FORT DEVENS
MASSACHUSETTS
EPA ID# MA7210025154



EPA REGION 1
CONGRESSIONAL DIST. 05
Worcester County
35 miles west of Boston

Other Names:
South Post
Central Post
North Post

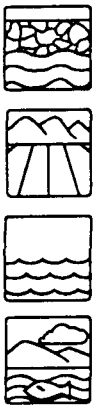
Site Description

Fort Devens is 35 miles west of Boston. It covers 9,416 acres at the intersection of four towns: Ayer and Shirley in Middlesex County and Lancaster and Harvard in Worcester County. Founded in 1917, the Fort trains active duty personnel to support various Army units. It also has custody of Fort Devens-Sudbury Training Annex, 12 miles to the southwest, which was listed on the NPL in 1990. Fort Devens can be divided into three areas: the 2,300-acre Central Post, which is flanked by the 1,500-acre North Post and the 5,616-acre South Post. Studies have revealed 54 potential hazardous waste sites on Fort land. Among them are the 15-acre explosive ordnance disposal range (South Post), where explosives and unusable munitions have been detonated or burned in open unlined pits since 1979 and where soil sampling has led to the discovery of heavy metals, volatile organic compounds (VOCs), and explosives residues; the 50-acre sanitary landfill (Central Post), where household wastes, military refuse, asbestos, construction debris, waste oil, and incinerator ash have been dumped since the 1930s; and a firefighting training area (North Post), where the possibility for petroleum, oil, and lubricant contamination exists, as evidenced by stained asphalt, concrete, and soil. The area is largely rural/residential. Approximately 21,700 Fort employees and Ayer residents obtain drinking water from wells within 3 miles of the landfill; a Fort Devens well is 1,670 feet from the landfill. An 8-mile section of the Nashua River lies within the Fort's boundaries. The 630-acre Oxbow National Wildlife Refuge is in the east-central portion of Fort Devens on land the Army deeded to the Department of the Interior in 1973. An 83-acre wetland is in the refuge northeast of the ordnance range.

Site Responsibility: The site is being addressed through Federal actions.

NPL LISTING HISTORY
Proposed Date: 07/14/89
Final Date: 11/15/89

Threats and Contaminants



Monitoring wells near the landfill indicate groundwater contamination from heavy metals including cadmium, lead, mercury, iron, and arsenic. The soil near the explosive ordnance disposal range is contaminated with heavy metals as well as VOCs and explosive residues. Heavy metal contaminants, including arsenic, chromium, nickel, and lead also are found in the surface water near the landfill. Potential threats exist for the 630-acre wildlife refuge containing an 83-acre wetland, which is in the center of Fort lands; the base drinking water wells; the Plow Shop pond located in Ayer; and the Nashua River, along with its surrounding habitat.

Cleanup Approach

The site is being addressed in four long-term remedial phases focusing cleanup of the contaminated groundwater, soils, and sediments at the Shepley's Hill Landfill, Cold Spring Brook Landfill, South Post, and additional contaminated areas.

Response Action Status

Shepley's Hill Landfill: An investigation by the Army is scheduled to start in 1991 to consider the extent and nature of contamination; recommendations for cleanup strategies are scheduled to be made in 1993. Two additional potential sites are included in this area.

Cold Spring Brook Landfill: The Army is slated to begin an investigation in 1991 to determine the nature and extent of contamination. Cleanup alternatives for the site are scheduled to be completed in 1993. An additional four potential sites in this area will be reviewed to determine whether in-depth studies are needed.

South Post: A detailed site investigation by the Army is scheduled to start in 1991 at several sites located on the 5,616-acre South Post to determine whether additional studies are needed. If they are, recommended cleanup strategies will be developed in 1993. One other potential site in this area will be reviewed for further action.

Additional Contaminated Areas: The EPA is preparing an investigation for several areas located on the Central Post. The investigation will determine whether possible contamination warrants a detailed study of the site. The investigation is scheduled to start in 1991 and will result in recommended strategies for cleanup in 1994. There are 54 potential areas of contamination located at the Central Post.

Site Facts: Fort Devens is participating in the Installation Restoration Program, a specially funded program established by the Department of Defense (DoD) in 1978 to identify, investigate, and control the migration of hazardous contaminants at military and other DoD facilities. An Interagency Agreement between the Army and the EPA is expected to be signed in June 1991 outlining the legal framework for the cleanup.

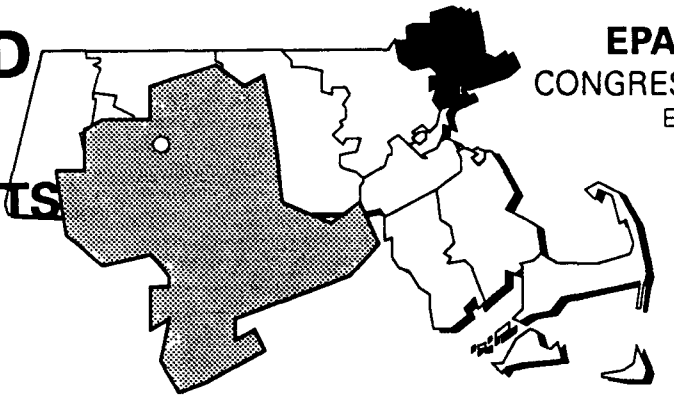
Environmental Progress

After adding the Fort Devens site to the NPL, the EPA assessed the actions being taken by the Army and has determined that there are currently no immediate threats to public health or the environment. Some intermediate actions may be deemed necessary based on the investigations while the site awaits further cleanup activities.

GROVELAND WELLS

MASSACHUSETTS

EPA ID# MAD980732317



EPA REGION 1
CONGRESSIONAL DIST. 06
Essex County
Groveland

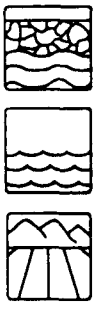
Site Description

The Groveland Wells site includes the watershed and aquifer supplying two contaminated municipal water wells, as well as three properties known to be polluting groundwater and soil in the area. The entire site area covers 850 acres. Groveland's production wells #1 and #2 were the sole source of drinking water for the town. Both were shut down in 1979, when the State detected trichloroethylene (TCE) contamination. The Town instituted emergency conservation measures and temporarily obtained water hookups from neighboring communities. Groveland developed well #3 along the Merrimack River in the early 1980s, but the water supply still falls short of the town's needs and growth trends. The EPA currently is trying to restrict hazardous waste materials from the highly contaminated Valley Manufacturing Co. site, where metals and plastic parts have been made since 1963. Operators used subsurface disposal systems and underground tanks that dispersed liquids into buried leachfields. They also routinely dumped hazardous materials on the ground. From 1964 to 1972, as much as 20 gallons per month of these materials were released. Chemicals released in these ways included cutting oils, volatile organic compounds (VOCs), and acid bath wastes. An estimated 5,000 people live within 3 miles of the site in this residential area. The EPA has built a groundwater cleaning plant at well #1. As of early 1989, the plant has continuously provided a treated public water supply to the town.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 12/30/82
Final Date: 09/01/83

Threats and Contaminants



The groundwater is contaminated with VOCs and heavy metals including lead and arsenic. Surface water and sediment contain low levels of contaminants to which people could be exposed while swimming. The greatest threat is posed by drinking water from contaminated wells, a danger that has been minimized by the provision of an alternate water supply. Highly contaminated soil found on the Valley property could pose a risk to the workers involved in site cleanup activities.

Cleanup Approach

The site is being addressed in three stages: immediate actions supply and two long-term remedial phases focusing on groundwater migration and source control.

Response Action Status

Immediate Actions: The EPA installed a groundwater treatment facility for Groveland's municipal well station #1. Valley Manufacturing Co., under a State order, installed a groundwater treatment system just north of the Old Mill Pond. The treatment system intercepts and treats a defined area of groundwater contamination. The EPA has been treating water from municipal supply well #1 with carbon adsorption to remove VOCs since 1989. The treatment plant operated as a public water supply from August through November 1987 and again from the spring through fall of 1988. It went on line again in early 1989 and is expected to operate on a continuous basis for the life of the facility.

Groundwater Migration: The EPA began its initial study of site contamination and cleanup options in 1983. The initial study was completed in 1985. In 1990, the EPA began conducting a separate study referred to as a "management of migration" study to evaluate movement of groundwater contaminants and what further cleanup activities are needed. This will be used to develop a permanent remedy to address contamination throughout the Johnson Creek aquifer. The first stage of this investigation was completed in 1991.

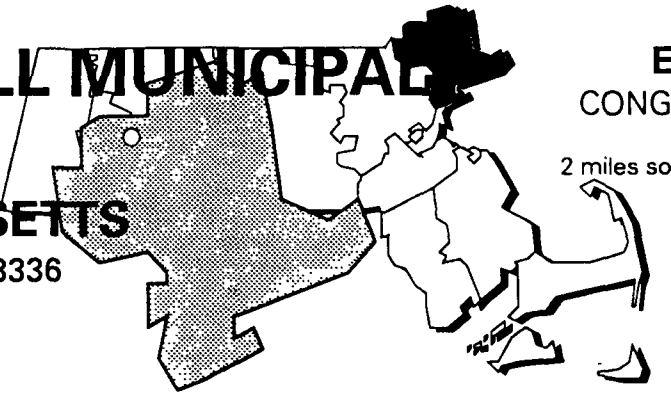
Source Control: A supplemental study based on the initial studies rederred to above narrowed the focus of contamination to one location, and the following remedy for the Valley area was selected: (1) in-place vacuum extraction of VOCs from 20,000 cubic yards of site soils and capture of those contaminants by activated carbon treatment (a proven, innovative technology); (2) pumping groundwater on the site and treating it by air stripping, followed by passing through a carbon-containing filter to recapture the contaminants; (3) reinjecting some of the cleaned water into the ground "above" the site to speed saturated soil cleanup; (4) discharging the rest of the cleaned groundwater to the aquifer "below" the site; (5) treatment of air emissions from the cleanup process; (6) groundwater monitoring; and (7) sealing or disconnecting all lines to the acid bath finishing process disposal system. Incidental treatment of inorganic compounds and other contaminants will be provided as necessary in order to operate the VOC contaminant treatment system efficiently and meet discharge permit limits. The EPA will use the results of the vacuum extraction pilot study to complete the supplemental evaluation of alternatives. Engineering design of the remedy began in early 1991, and cleanup activities are scheduled to start in 1992.

Site Facts: The Town of Groveland sued the potentially responsible parties and settled with one of them to undertake a study of the nature and extent of contamination. The nearby Haverhill site has been determined to be contributing to the groundwater contamination and has been separately added to the NPL.

Environmental Progress

Initial construction of water treatment facilities has provided a safe drinking water source, and the various cleanup actions taking place at the Groveland Wells site have reduced the possibility of exposure to hazardous materials and continue to reduce contamination in groundwater. The EPA's investigation into supplemental treatment alternatives will identify the final cleanup remedies to make the site safer until a final cleanup method is implemented.

HAVERHILL MUNICIPAL LANDFILL
MASSACHUSETTS
EPA ID# MAD980523336



EPA REGION 1
CONGRESSIONAL DIST. 06
Essex County
2 miles southeast of downtown Haverhill

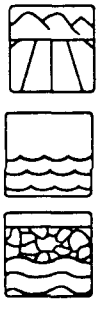
Site Description

Haverhill Municipal Landfill is a 71-acre industrial and municipal facility, which lies adjacent to the Merrimack River. Trimount Bituminous Products operated the site as an industrial landfill beginning in the late 1930s and started to accept municipal wastes in the 1960s. Two of the landfill's three tracts were used for disposal of municipal and commercial refuse, while the third received liquid wastes and sludges. Wastes included steel drums, tires, and flammables, including lacquers, paints, oils, and glues. These materials either were dumped on the surface of the site or were deposited into shallow pits. Sludges and liquids were dumped near the river, which borders the site on the north. Resulting land erosion carried liquid wastes into the river. Monitoring wells a short distance upgradient from the river showed contamination. Until 1975, the landfill was operated in an unsanitary manner with little compaction of refuse. The facility closed in 1981. Since 1981, the landfill has accepted sludges generated by the Haverhill Wastewater Treatment Plant. The sludge is mixed with sand and/or loam and then spread over the surface of the landfill. Numerous reports have cited lax security on the property; dirt bikers have been observed riding on the site. The area is residential; the two nearby towns, Haverhill and Groveland, have a combined population of approximately 51,400.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 10/15/84
Final Date: 06/10/86

Threats and Contaminants



Chromium and arsenic have been found in liquids on site. The soil is contaminated with benzoanthracene, dibenzofuran, and volatile organic compounds (VOCs). A nearby creek is contaminated with VOCs and manganese. Drums found on the site contained material contaminated with VOCs including toluene and xylene. The groundwater is contaminated with VOCs and heavy metals including arsenic, lead, mercury, manganese, and chromium. Potential threats include drinking contaminated groundwater or exposure to surface waters in a nearby creek. Two public water supply wells in Groveland were closed in 1979 due to possible contamination.

Cleanup Approach

The site is being addressed in two stages: initial actions and a long-term remedial phase focusing on cleanup alternatives for the entire site.

Response Action Status

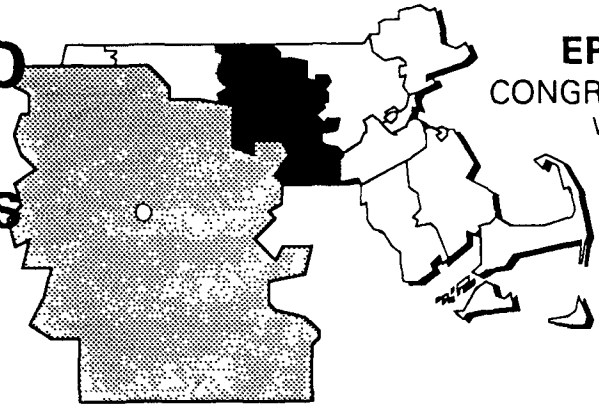
Initial Actions: In 1990, the EPA discovered two drums of unknown material on the site. Tests revealed the contents of the drums to be contaminated with VOCs. The contaminated drums were stabilized and were removed from the site by the site owner.

Entire Site: An in-depth study of the nature and extent of the contamination at the site is scheduled to start in 1991. The results of the study, scheduled for completion in 1993, will identify recommended cleanup strategies.

Environmental Progress

As a result of the closing of the two contaminated public water supply wells and the removal of contaminated drums, the EPA determined that the public is not at risk while the Haverhill site awaits further cleanup activities.

HOCOMONCO POND
MASSACHUSETTS
EPA ID# MAD980732341



EPA REGION 1
CONGRESSIONAL DIST. 03
Worcester County
Westborough

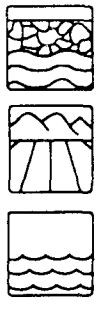
Site Description

The Hocomonco Pond site, consisting of approximately 23 acres, included a recreational pond that was closed by the State in 1980. From 1928 to 1946, the site was used as a wood-treating operation. The business consisted of saturating wood products with creosote for preservation. During the operations, wastewater was discharged into a pit lagoon. The lagoon was excavated on the property to store spillage and waste from the wood-treating operation. As this lagoon became filled with waste creosotes, sludges, and water, its contents were pumped into a low depression, also known as Kettle Pond. The wood-treatment facility operated until the mid-1940s, when it was converted into an asphalt mining plant. Discarded aggregate and asphalt are common throughout the site. The last use of the site was as a cement plant where dry cement was distributed in bulk. The surface water and groundwater have shown creosote contamination. Approximately 2,500 people, who depend on groundwater as a drinking water supply, and 14,000 people, who use the surface water for other purposes, live within 3 miles of the site. The nearest residences are 2,000 feet from the site.

Site Responsibility: The site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 12/30/82
Final Date: 09/01/83

Threats and Contaminants



The groundwater, soil, and sediments from the pond and its shore are contaminated with heavy metals including arsenic and chromium, creosotes, and carcinogenic compounds. Public risks include the possibility of direct contact with or accidental ingestion of the contaminated soil and groundwater.

Cleanup Approach

The site is being addressed in two long-term remedial phases focusing on interim source control and groundwater treatment.

Response Action Status

Interim Source Control: The cleanup alternatives that the EPA has selected include site grading, capping, and relocation of the storm drain pipe currently located next to the east side of the former lagoon. For the Kettle Pond area, cleanup included dewatering the pond and lowering the groundwater level in the immediate area. Soil and waste excavation were based primarily on visible contamination criteria. Additional removal of contaminants took place based on the sampling and analysis of soil conducted during excavation. Hocomonco Pond and a discharge stream were dredged and contaminated sediments disposed of on site. Removal and on-site disposal of contaminated materials at three isolated areas of contamination, air and water quality monitoring, and post-closure activities are consistent with Federal regulations. The parties potentially responsible for site contamination commenced construction of the cleanup remedy in 1989. Relocation of the storm drain pipe was completed in 1990.

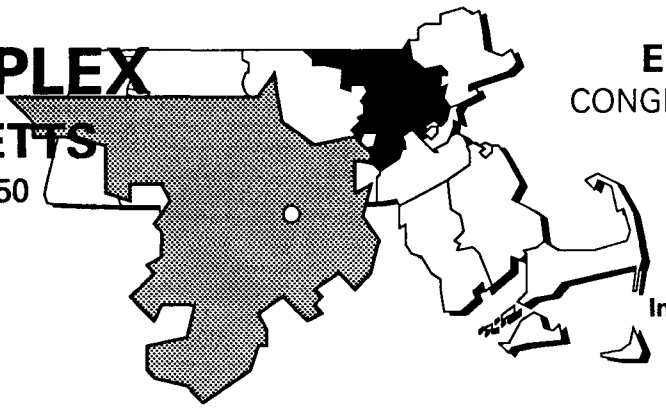
Groundwater Treatment: The parties potentially responsible for the site contamination are conducting a further investigation into the groundwater contamination, after which the EPA will determine an appropriate remedy for treating the contaminated groundwater. The investigation is scheduled to be completed in 1993.

Site Facts: A Consent Decree was filed in the U.S. District Court in 1987, allowing the potentially responsible parties to conduct preliminary investigations into site contamination.

Environmental Progress

Following the listing of this site on the NPL, the EPA completed a site assessment and determined that the site presently poses no immediate threat to public health or the environment. Current efforts to control movement of contaminants and to remove contamination sources will further reduce potential threats. Hocomonco Pond is safe while it awaits future groundwater cleanup actions.

INDUSTRI-PLEX
MASSACHUSETTS
EPA ID# MAD076580950



EPA REGION 1
CONGRESSIONAL DIST. 07
Middlesex County
North Woburn

Other Names:
Mark Phillip Trust
Woburn Site
Industri-Plex 128 Site

Site Description

The Industri-Plex site is a 250-acre industrial park. From 1853 to 1931, the site was used for manufacturing chemicals such as arsenic insecticides, acetic acid, and sulfuric acid for local textile, leather, and paper manufacturing industries. Chemicals manufactured by other industries at the site include phenol, benzene, and toluene. From 1934 to 1969, the site was used to manufacture glue from raw animal hides and chrome-tanned hides. From 1969 to the present, the site has been developed for industrial use. Excavation in the 1970s uncovered and mixed 130 years of accumulation of industrial by-products and wastes. Residues from animal hides used in the manufacture of glue were buried in pits on the site property. Process wastewater was settled on site and was discharged to the municipal sewer. Many of the pits, piles, and lagoons are continuously leaching toxic metals into the environment. Many of the wastes in the soil were relocated and mixed into piles near swampy areas on the property. The site currently consists of streams and ponds, active and abandoned manufacturing facilities, and waste deposits buried on the site. Animal hide residues are found on approximately 20 acres of the site in four different piles. Portions of stockpiled wastes sloughed off, releasing hydrogen sulfide gases to the atmosphere and toxic metals and soils to the pond and wetlands. Residences are located within 1,000 feet of the site, and more than 34,000 people live within 3 miles of the site.

Site Responsibility: The site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 10/01/81
Final Date: 09/01/83

Threats and Contaminants

The groundwater is contaminated with volatile organic compounds (VOCs) including benzene and toluene, and with arsenic. The soil is contaminated with heavy metals including arsenic, copper, chromium, and lead. Also, a pervasive "rotten egg" odor has been caused by hydrogen sulfide gas generated by the decay of the buried animal glue manufacturing wastes. Exposure can occur through direct contact with contaminated soil; however, since the site is mostly vacant now, with plans for industrial and commercial use, the potential exposure most likely is limited to workers on the site during future construction. The contaminated groundwater has the potential to migrate to two Woburn municipal drinking wells, which are currently closed.

Cleanup Approach

The site is being addressed in three stages: initial actions and two long-term remedial phases focusing on site stabilization and cleanup of groundwater contamination.

Response Action Status

Initial Actions: The EPA installed a 10,000-foot fence to restrict site access in 1986. Extensive damage to the main areas of the fence occurred, and drums were dumped illegally on the site. Areas of the fence requiring repairs were identified by the EPA, and work to re-secure the site was completed in 1988. Warning signs were posted.

Site Stabilization: In 1986, the EPA selected the cleanup activities that will be conducted by the parties potentially responsible for site contamination. To address the problem of approximately 1,000 cubic yards of contaminated soils and sludges at the site, the site will be graded, a permeable soil cover cap will be installed over certain areas, institutional controls will be implemented, water quality will be monitored, and post-closure activities will be maintained, consistent with hazardous waste regulations. To address groundwater contamination at the site, an interim remedy of pumping and treating hot spot areas of contaminated groundwater will be implemented. Plans also include the development of a comprehensive groundwater response plan for the aquifer, including groundwater treatment to remove VOCs and metals and discharge of treated water to the upgradient portion of the aquifer. This will help disperse remaining contaminants. Treatment will be followed by groundwater monitoring. Remedies selected in connection with odors and air contamination include stabilization of the side slopes of the various piles, installation of a gas collection layer, installation of a synthetic and impermeable membrane cap to prevent rainwater from entering the piles and gases from escaping without treatment, treatment of gases with either activated carbon or thermal oxidation (the final treatment selection will be decided after the impermeable cover has been installed), implementation of an air quality monitoring program, and routine maintenance. The potentially responsible parties began designing the cleanup remedies in 1988. Once the design phase is completed, expected in 1992, cleanup activities will begin. Design for the site cap and localized groundwater pump and treatment for VOCs and arsenic is expected to be finalized in 1992. Construction of these remedies is anticipated later in 1992.

Groundwater Contamination: An investigation into the extent and nature of groundwater contamination is underway and is expected to be completed in 1991. The study will determine the level of metals and organics in the contamination plume and will recommend technologies for completing the final cleanup.

Site Facts: In 1979, in response to illegal filling of wetlands, the EPA obtained a court order to stop further development activities. The EPA and the State entered into a Consent Order with Stauffer Chemical in 1982, whereby Stauffer was to conduct an investigation and recommend cleanup action. In 1988, the EPA and the potentially responsible parties signed a Consent Decree to implement the remedy for stabilizing the site and to reimburse the EPA for past costs and future oversight costs.

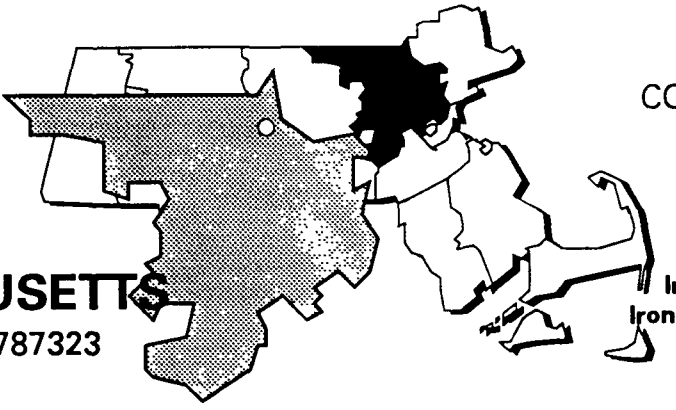
Environmental Progress

Initial actions of fencing and posting warning signs around the site have restricted access to the Industri-Plex site and made it safer until the final cleanup begins. Upon completion of the final cleanup remedies, the soil and groundwater contamination levels at the Industri-Plex site will be reduced to meet established health and ecological standards for the site.

IRON HORSE PARK

MASSACHUSETTS

EPA ID# MAD051787323



EPA REGION 1
CONGRESSIONAL DIST. 07
Middlesex County
North Billerica

Other Names:
Boston and Maine RR
Iron Horse Park/RSI, Inc. Dump
Iron Horse Park/John Manville Dump
Shaffer Landfill
Billerica Landfill
Pond St. Landfill

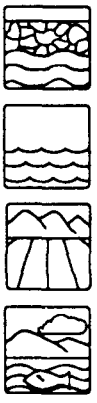
Site Description

The Iron Horse Park site, a 533-acre industrial complex, includes manufacturing and railyard maintenance facilities, open storage areas, landfills, and wastewater lagoons. A long history of activities at the site, beginning in 1913, has resulted in contamination of soil, groundwater, and surface water. An asbestos landfill is located to the northwest and adjacent to the lagoons area. Middlesex Canal runs along the length of the northern boundary. It is drained by Content Brook, which runs through residential areas into the Shawseen River east of the site. Richardson Pond lies north of the site and is also drained by the Content Brook. An unnamed brook, which runs northerly through the site near wastewater lagoons, drains into a marshland near the asbestos landfill. Approximately 61,000 people live within a 3-mile radius of the site. There are four day care centers or nursery schools, two housing units for the elderly, and a walk-in clinic in the area. A trailer park and condominium complex are located within a mile of the site.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 09/01/83
Final Date: 09/21/84

Threats and Contaminants



On-site groundwater and surface water sporadically are contaminated with organic and inorganic chemicals, asbestos, and heavy metals including arsenic, cadmium, lead, and selenium. The soil at the site is contaminated with polychlorinated biphenyls (PCBs), petrochemicals, and the same heavy metals as those found in the groundwater. The majority of surface water contamination is located in the vicinity of Shaffer Landfill. People are at risk by coming in direct contact with or accidentally ingesting contaminated water, soil, or sediments. Environmentally sensitive marshland and wetlands are located near the site and could be subject to contamination.

Cleanup Approach

The site is being addressed in four stages: initial actions and three long-term remedial phases focusing on cleanup of the lagoon areas, Shaffer Landfill, and groundwater and surface water.

Response Action Status

Initial Actions: In 1984, the EPA removed asbestos deposits from various areas on the site and covered an asbestos landfill with gravel, stone, and topsoil. The EPA then seeded and fenced the area. By covering the asbestos landfill, the EPA eliminated the potential for inhalation of fugitive asbestos dust particles.

Lagoon Areas: The remedy selected by the EPA to be performed by the owners to clean up the lagoons involves excavation and on-site treatment of contaminated soil and sludge by bioremediation, with the residue disposed of in the lagoon area. This action will be followed by covering the area with clean soil and establishment of a vegetative cover. The owner then will decontaminate the lagoon system piping and pumps. Development of the design and specifications for these remedies currently is underway, and site cleanup activities are expected to begin in 1991.

Shaffer Landfill: In accordance with a State Consent Agreement, the Shaffer Landfill area has been closed. The owners have installed a two-layer cover over the landfill, the bottom layer consisting of low-permeability clay material and a top layer of soil capable of supporting vegetation. In addition, a gas collection and a gas vent/flare system have been installed to reduce odors from the landfill. The EPA is completing an investigation of the Shaffer Landfill area that evaluates the current cover and considers other capping options. In addition, the EPA will consider leachate collection and controls to protect groundwater, wetlands, and surface water that surround the landfill. The study was completed in early 1991, and cleanup methods are expected to be identified shortly.

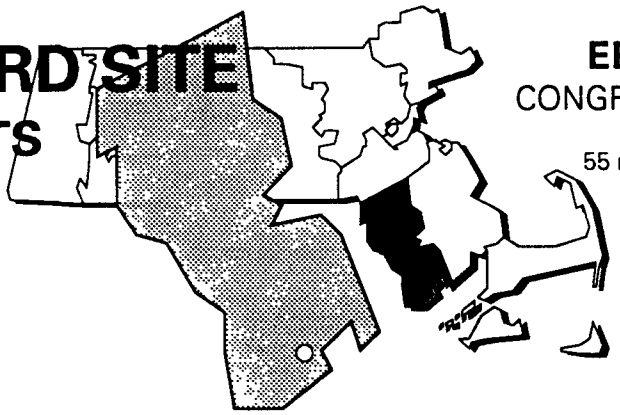
Groundwater and Surface Water: An EPA investigation currently is underway to evaluate the levels and the extent of groundwater and surface water contamination, potential sources, and the possible means of migration. A work plan for a supplemental investigation is being developed. The study and selection of final cleanup technologies are expected to be completed in 1993.

Site Facts: A Consent Agreement was reached in 1984 between the State and the owners for closure of the Shaffer Landfill area. The agreement established a series of cleanup activities and a schedule for their implementation at the landfill. In 1990, the potentially responsible parties assumed responsibility for designing the cleanup approach for the lagoon areas, under a Consent Decree with the State.

Environmental Progress

The removal of asbestos materials and the construction of a fence surrounding the landfill have reduced the exposure potential at the Iron Horse Park site while it awaits further cleanup activities. The installation of a cap also will control odors and eliminate the migration of contaminants into the surface water and groundwater on and off site. Further planned activities will reduce contamination levels at the site, making it safe to area residents and the environment.

NEW BEDFORD SITE
MASSACHUSETTS
EPA ID# MAD980731335



EPA REGION 1
CONGRESSIONAL DIST. 10
Bristol County
55 miles south of Boston

Site Description

The 18,000-acre New Bedford Site is an urban tidal estuary consisting of a harbor and bay that are highly contaminated with polychlorinated biphenyls (PCBs) and heavy metals. Manufacturers in the area used PCBs while producing electric capacitors from 1940 to 1978. Until the late 1970s, when the use of PCBs was banned by the EPA, factories discharged industrial process wastes containing PCBs into the harbor. PCB contamination in the New Bedford Harbor area is widespread as a result of poor disposal practices. The harbor is contaminated for at least 6 miles, from the upper Acushnet River to Buzzards Bay. Approximately 98,500 people are living within 3 miles of the site. A 5-acre northern portion of the Acushnet River Estuary is contaminated with high levels of PCBs and has been identified as the hot spot area of the site. The contamination of the harbor and bay sediments by high concentrations of PCBs and heavy metals has resulted in closing the area to lobstering and fishing and has limited recreational activities and harbor development.

Site Responsibility: This site is being addressed through Federal actions.

NPL LISTING HISTORY
Proposed Date: 07/01/82
Final Date: 09/01/83

Threats and Contaminants

PCBs and heavy metals, notably cadmium, lead, copper, and chromium, were identified in sediments, soil, and marine life. Levels of PCBs in some marine life exceed the regulatory limit for PCBs. The major potential public health risks in the hot spot area involve direct contact with contaminated sediments and eating contaminated fish and shellfish from the area. There is an increased carcinogenic risk for people who eat PCB-contaminated fish from the harbor and estuary on a daily or weekly basis. Currently, fishing is restricted in these areas to minimize the potential risk. There also is an increased risk to public health from eating lead-contaminated plant or animal life. The risk to plant or animal life is greatest for bottom-dwelling organisms that have direct contact with contaminated sediments.

Cleanup Approach

This site is being addressed in three stages: an initial action and two long-term remedial phases focusing on the hot spot area and the remaining contaminated areas.

Response Action Status

Initial Action: In 1982, the Coast Guard erected signs warning the public of the presence of PCBs in the harbor and industrial areas. The State intensified efforts to restrict access to the harbor. Bilingual warning signs in English and Portuguese were posted along the New Bedford and Fairhaven shoreline. When the signs were destroyed by winter weather, the EPA replaced them. In 1985, 2,000 feet of chain-link fence at two recreational facilities were erected to keep people out of the contaminated areas.

Hot Spot Area: In 1985, the Army Corps of Engineers began to evaluate alternatives for addressing harbor contamination. In 1988, the investigation was expanded, allowing the Corps to conduct demonstrations of dredging equipment and construction and testing of disposal facilities in the estuary, while continuing to carry out site sampling, analysis, and research. Hydraulic dredges were tested, sediment disposal facilities were constructed, and extensive environmental monitoring was conducted to determine whether removal and construction activities could occur without spreading contaminants. The engineering study conducted by the Corps will be used by the EPA to formulate the cleanup approach for the site. The EPA's selected remedy for the hot spot area includes removal and incineration of contaminated sediments to permanently reduce the migration of contaminants throughout the harbor area. Specifically, this alternative calls for the removal of 10,000 cubic yards of contaminated sediments from the hot spot area at depths up to 4 feet, and then dewatering the sediments. Wastewater produced during dewatering will be treated prior to discharge into the harbor. Contaminated sediments will be treated at a transportable incinerator. The cleanup of the hot spot areas has been broken into two phases. Design of the remedy for the first phase began in 1990 and is scheduled to be completed in 1991. The design of the second phase is expected to be completed 1992.

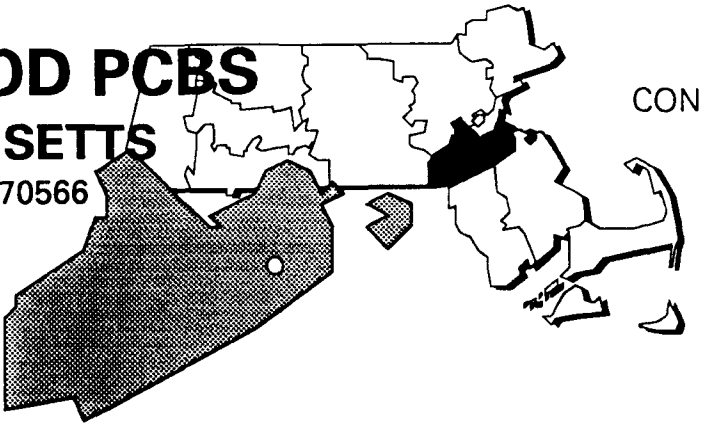
Remainder of the Site: The EPA currently is evaluating different alternatives for cleaning up the remainder of the site. The results of this study were released in 1990. The EPA is expected to issue a cleanup plan in 1991, after which final cleanup activities can begin.

Site Facts: In 1982, the EPA entered into Consent Agreements with two companies to address the PCB problem on their properties.

Environmental Progress

Although much work has yet to be done due to the enormity of this project, progress has been made toward final cleanup of the harbor and surrounding areas. The initial actions have restricted exposure to contaminated seafood and have reduced the potential of exposure to hazardous substances at the New Bedford Site.

NORWOOD PCBS
MASSACHUSETTS
EPA ID# MAD980670566



EPA REGION 1
CONGRESSIONAL DIST. 09
Norfolk County
Kerry Place in Norwood

Other Names:
Grant Gear, Inc.
Dean Street Site

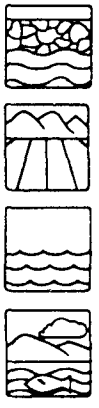
Site Description

The Norwood PCBs site is located on 26 acres of mainly commercial and industrial properties. The site is bordered by Route 1, the Dean Street access road, Meadow Brook, Pellana Road, and Dean Street. The site consists of several parcels of land, including the Grant Gear facility, which currently produces gears for industry; properties in Kerry Place; an automobile dealership; and associated parking areas and adjacent fields. In 1979, the site was subdivided. The northeastern portion of the site, approximately 9 acres in size, was purchased by Grant Gear Realty Trust and leased to Grant Gear Works, Inc. The southern and western portions of the site were further subdivided, a major portion of which was named Kerry Place. Most of the lots now are occupied by commercial and light industrial buildings. Beginning in the 1940s, previous owners or operators of the Grant Gear building used polychlorinated biphenyls (PCBs) in the production of electrical transformers and other electrical components. In 1983, the State detected high levels of PCBs in the soil on the site, and the EPA conducted an emergency removal of contaminated soil. Approximately 8,000 people live within a mile of the site.

Site Responsibility: The site is being addressed through Federal and State actions.

NPL LISTING HISTORY
Proposed Date: 10/01/84
Final Date: 06/01/86

Threats and Contaminants



The on-site groundwater is contaminated with PCBs and volatile organic chemicals (VOCs) such as trichloroethylene (TCE), and vinyl chloride. On-site soil and sediments are contaminated with PCBs, polycyclic aromatic hydrocarbons (PAHs), and heavy metals. People may face health risks by coming in direct contact with or accidentally ingesting on-site soil and sediments. Increased risk may be posed to human health if on-site groundwater, left untreated, were used as a drinking water source. The concentrations of PCBs in the sediments in Meadow Brook may pose an increased risk to aquatic organisms. Exposure to PCB-contaminated soils also may pose a threat to animal life inhabiting the site area.

Cleanup Approach

The site is being addressed in two stages: initial actions and a long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Initial Actions: In 1983, the EPA conducted an emergency removal of over 500 tons of highly contaminated soil from the site and transported it to an approved disposal facility. In 1986, the State installed a 4-foot-high wire mesh fence around a 1 1/2-acre portion of the northwestern and southwestern corners of the Grant Gear property and covered contaminated soils within the fenced areas. The cover consisted of a filter-fabric liner and 6 inches of crushed stone.

Entire Site: The remedies selected by the EPA to clean up the site include excavating soils, dredge material, and sediments and treating them by solvent extraction of PCBs, with on-site disposal; flushing or replacing the site drainage system; cleaning equipment surfaces; collecting groundwater and treating it by removing the contaminants using air filtering to convert volatile chemicals to a gas (activated carbon will be used before or after the air filtration step to remove PCBs); and restoring the wetlands after minimizing the effects on the wetlands during the cleanup of Meadow Brook sediments. The EPA is preparing the technical specifications and design for the cleanup. These activities will commence once the design phase is completed, expected in 1993.

Site Facts: The State originally investigated the site in response to a telephone call from an area resident.

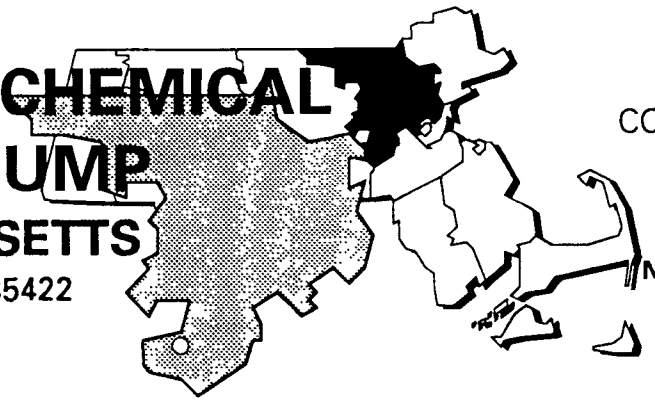
Environmental Progress

The initial cleanup actions described above have removed contaminated sources and restricted access to the site, thereby reducing the potential of exposure to hazardous substances at the Norwood PCBs site. These completed actions have made the area safer while it awaits planned cleanup activities.

NYANZA CHEMICAL WASTE DUMP

MASSACHUSETTS

EPA ID# MAD990685422



EPA REGION 1

CONGRESSIONAL DIST. 03

Middlesex County

Megunco Road in Ashland

Other Names:

Nyanza Chemical Waste Dump

Site Description

The Nyanza Chemical Waste Dump site is a 35-acre parcel of land adjacent to an active industrial complex. From 1917 to 1978, the site was used to produce textile dyes, intermediates, and other products. Nyanza, Inc. operated on this site from 1965 until 1978, when it ceased operations. Large volumes of industrial wastewater containing high levels of acids and numerous organic and inorganic chemicals including mercury were generated by these companies. The wastes were partially treated and discharged into the Sudbury River through a small stream, referred to as Chemical Brook. Over 45,000 tons of chemical sludges generated by Nyanza's wastewater treatment processes, along with spent solvents and other chemical wastes, were buried on site. The area that contains the largest amount of buried waste and exposed sludge is referred to as the Hill section. The current owner leases the old plant grounds to various businesses. The estimated population within 3 miles is 10,000 people.

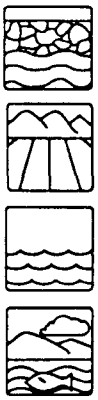
Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY

Proposed Date: 12/30/82

Final Date: 09/08/83

Threats and Contaminants



The groundwater, soil, sediments, and surface water are contaminated with heavy metals and chlorinated organics. The groundwater and soil also are contaminated with spent solvents and chemical wastes. The potential health threats to people include direct contact and accidental ingestion of contaminated surface water, groundwater, or soil. Wetlands nearby are contaminated with mercury, and fish in the Sudbury River exceed the regulatory limit for mercury. Two downstream reservoirs, used as backup water supplies, also contain sediment with high mercury contamination levels.

Cleanup Approach

This site is being addressed in four stages: initial actions and three long-term remedial phases focusing on source control and soil cleanup, cleanup of the groundwater, and cleanup of surface water and sediments.

Response Action Status

Initial Actions: In 1987 and 1988, the EPA excavated an underground storage vault containing 12,025 tons of material; 300 tons of contaminated soils were incinerated, and an additional 356 tons of soils were excavated and disposed of off site.

Source Control and Soil: The remedies selected by the EPA to control the source of the contamination and to clean up the soil include excavating all outlying sludge deposits and contaminated soils and sediments associated with these deposits; consolidation of this material with the Hill sludge deposits; capping of the Hill area to prevent water from entering; construction of a groundwater and surface water diversion system on the upgradient side of the Hill; backfilling the excavated areas to original grade and establishing a vegetative cover in the wetland areas; and constructing a more extensive groundwater monitoring system to allow for future evaluation of the cap. Approximately 60% of the 13-acre cap in an area of existing lagoons, sludge pits, and buried building debris has been covered with earth from on-site excavations in clean areas. The remaining portion of the area to be capped has been excavated to bedrock to create a cell for the disposal of contaminated soils and solidified sludges from the on- and off-site remediation areas. The fencing of the site is 90% completed. More than 65,000 cubic yards of contaminated soil were excavated and placed in the cell in 1990. The site cap is expected to be completed in 1991.

Groundwater: The EPA is conducting an investigation into the off-site groundwater contamination. The study will define the contaminants and will recommend alternatives for the final cleanup. Remedies for cleanup are expected to be selected in the summer of 1992.

Surface Water and Sediments: The EPA also is studying the contamination of the surface water and sediments of the Sudbury River. The study will define the contaminants and will recommend alternatives for the final cleanup. Preliminary sampling has proven that sediment, surface water, and fish are contaminated with heavy metals. It is scheduled to be completed in 1992.

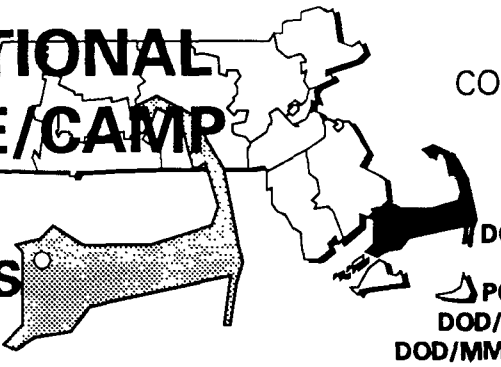
Environmental Progress

The initial actions described above have reduced the potential of exposure to hazardous substances by controlling the pathway of contamination migration and isolating wastes under an impermeable cap. These completed actions have made the Nyanza Chemical Waste Dump site safer while actions continue and the EPA investigates methods to address groundwater, surface water, and sediment contamination.

OTIS AIR NATIONAL GUARD BASE/CAMP EDWARDS

MASSACHUSETTS

EPA ID# MA2570024487



EPA REGION 1
CONGRESSIONAL DIST. 12
Barnstable County
Falmouth

Other Names:
DOD/MMR/USAF Sani Landfill
DOD/MMR/Base Landfill
POD/MMR/USAF Sani Landfill
DOD/MMR/Current Fire Training Area
DOD/MMR/Former Firefighting Training Area

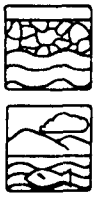
Site Description

The Otis Air National Guard Base (ANGB) and Camp Edwards site covers approximately 21,000 acres, today known as the Massachusetts Military Reservation (MMR). Although the occupants and property boundaries have changed several times since MMR was established in 1935, the primary mission has always been to provide training and housing to Air Force or Army units. A review of past and present operations and waste disposal practices identified potentially contaminated areas, including eight that cover 3,900 acres on the southern portion of MMR. Six of the eight areas are located within Otis ANGB property boundaries: Former Fire Training Area, Current Fire Training Area, Base Landfill, Non-destructive Testing Laboratory Leach Pit, Fly Ash Disposal Area, and a plume of contaminated groundwater from a sewage treatment plant, which extends 2 miles south. The two remaining waste areas, the Unit Training Equipment Site and Property Disposal Office Storage Yard, are at Camp Edwards, which currently is leased to the Army. The materials found at the eight areas are fly ash, bottom ash, waste solvents, waste fuels, herbicides, and transformer oil. While the Non-destructive Testing Laboratory operated (1970 to 1978), waste solvents, emulsifiers, penetrants, and photographic developers were deposited in the sewer system. Effluent from the sewage treatment plant was discharged into sand beds, where it seeped into groundwater. In 1984, the U.S. Geological Survey detected contaminants in the monitoring wells downgradient of the plant. In 1983 and 1984, the Air Force detected volatile organic compounds (VOCs) in on-site monitoring wells near the Base Landfill and Current Fire Training Area. Monitoring by the Air National Guard and the State Department of Environmental Quality has detected VOCs in more than 200 private wells and in one town well. The EPA has designated the Cape Cod aquifer underlying MMR as a sole source aquifer, under the Safe Drinking Water Act. The municipalities of Bourne and Sandwich and the Air Force base have an estimated population of 36,000 people and have drinking water wells within 3 miles of hazardous substances at the site. Irrigation wells also are within 3 miles. Ashumet Pond, less than 1 mile from the Former Fire Training Area, is used for recreational activities.

Site Responsibility: This site is being addressed through Federal actions.

NPL LISTING HISTORY
Proposed Date: 07/14/89
Final Date: 11/15/89

Threats and Contaminants



The groundwater is contaminated with VOCs, including trichloroethane, tetrachloroethylene, and dichloroethylene. To date, the wells are not contaminated. However, people would be at risk by accidentally drinking or coming into direct contact with contaminated groundwater. A fresh water wetland is 3,600 feet downstream from the site.

Cleanup Approach

This site is being addressed in 11 stages: initial actions and 10 long-term remedial phases. Initial work at the site focuses on Chemical Spill Area Ten, Chemical Spill Area Four, Fuel Spill Area Two, Fire Training Area One, Storm Drainage Area Swale Two, Fuel Spill Area One, Base Landfill, and the Remaining Priority One, Two, and Three Areas.

Response Action Status

Initial Actions: Water lines were installed in 1986 to private residences affected by groundwater contamination. In 1990, contaminated groundwater was pumped from the site and removed.

Chemical Spill Area Ten: The National Guard Bureau (NGB) is studying the nature and extent of contamination at the site. The investigation will define the contaminants and will recommend alternatives for cleanup. The study is expected to be completed in 1994.

Chemical Spill Area Four: The NGB will begin a study this area to determine the extent and nature of contamination. The investigation is scheduled to be completed in 1992.

Fuel Spill Area Two: The NGB currently is investigating the contamination at this site to determine the best cleanup strategy. The study is scheduled to be completed in 1992.

Fire Training Area One: The NGB is conducting a study of the area to define the contaminants and to recommend alternatives for final cleanup. The investigation is expected to be completed in 1993.

Storm Drainage Area Swale Two: The NGB is investigating this area to determine the nature and extent of contamination. The study is scheduled for completion in 1993.

Fuel Spill Area One: The NGB is conducting a study of the contaminants at this area. The study is expected to be completed in 1993.

Base Landfill: The NGB will begin a study of the contamination at the Base Landfill in 1991. The study, which will define the contaminants of concern and recommend cleanup alternatives, is scheduled to be completed in 1994.

The Remaining Priority One Areas: The NGB is investigating the remaining priority one areas as the nature and extent of contamination. This investigation is expected to be completed in 1994.

The Remaining Priority Two Areas: The NGB is conducting an investigation of these areas to determine the contaminants of concern. The study is scheduled to be completed in 1994.

The Remaining Priority Three Areas: The NGB is investigating the nature and extent of contamination at these areas. The study is scheduled to be completed in 1994.

Site Facts: The Army and Air Force, through the NGB, are participating in the Installation Restoration Program, a specially funded program established by the Department of Defense (DoD) in 1978 to identify, investigate, and control the migration of hazardous contaminants at military and other DoD facilities. The Air Force has investigated Air Force property only. The NGB, which represents both the Army and Air Force, is coordinating a second investigation that addresses the entire facility.

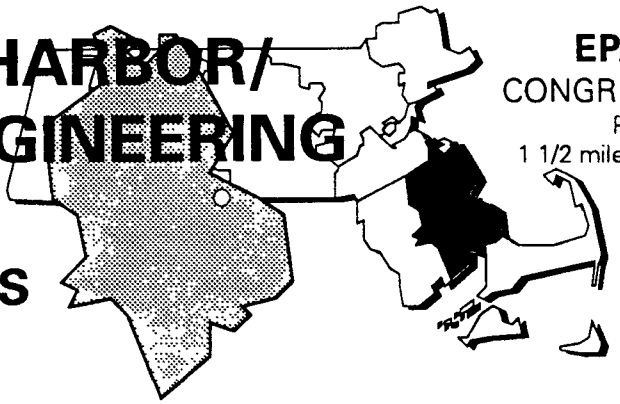
Environmental Progress 

Following listing of this site on the NPL, the EPA completed a site assessment, in coordination with the Army, Air Force, and the NGB and determined that the site presently poses no immediate threat to public health. The Otis Air National Guard Base/Camp Edwards site is safe while it awaits further cleanup activities. In addition, installation of water supply lines to residents affected by groundwater contamination has reduced that potential health threat.

PLYMOUTH HARBOR/ CANNON ENGINEERING CORP.

MASSACHUSETTS

EPA ID# MAD980525232



EPA REGION 1
CONGRESSIONAL DIST. 10
Plymouth County
1 1/2 miles northwest of Plymouth

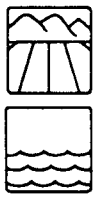
Site Description

The Plymouth Harbor/Cannon Engineering Corp. site covers 2 1/2 acres in Cordage Industrial Park. The site is located near the towns of Plymouth and Kingston. The facilities consist of three aboveground storage tanks and the foundation of a razed building. Each storage tank is surrounded by a 6- to 8-foot-high earthen berm. The northernmost tank is about 50 feet from Plymouth Harbor, while the central and southern tanks are about 180 feet from the Harbor. The storage tanks were originally constructed in the 1920s and used for storing fuel and oil that were unloaded from barges. In 1975, the company obtained a license to store motor oils, industrial oils and emulsions, solvents, lacquers, organic and inorganic chemicals, cyanide and plating wastes, plating sludge, oily solids, pesticides, and clay and filter media with chemicals. Cannon Engineering Corp. transported and stored hazardous wastes at the Plymouth facility and incinerated the wastes at its Bridgewater facility until 1980, when the facilities went into receivership. Approximately 50,000 people live in the two communities surrounding the site; 33,000 people live within a 3-mile radius of the site, and about 300 people work within 1/2 mile of the site. The area has a number of beaches, summer cottages, public recreation, and tourist areas. The historic area of Plymouth Rock is located 1 1/2 miles southeast of the site.

Site Responsibility: The site is being addressed through Federal and potentially responsible parties' action.

NPL LISTING HISTORY
Proposed Date: 12/01/82
Final Date: 09/01/83

Threats and Contaminants



The on-site soil and off-site sediments were contaminated with low levels of polycyclic aromatic hydrocarbons (PAHs) and lead. Pesticides also were present in the on-site soil. The site is fenced to limit access. Long-term exposure to contaminated on-site soils no longer poses a potential health threat to people. Plymouth Harbor is used for boating and water sports.

Cleanup Approach

The site is being addressed in three stages: immediate actions and two long-term remedial phases focusing on source control and cleanup alternatives for the entire site.

Response Action Status

Immediate Actions: In 1983, Salt Water Trust removed the contents and then cleaned and decontaminated the south tank. The contents of the central tank were removed by the EPA. A total of 44,022 gallons of oil-phase waste and 139,877 gallons of aqueous-phase waste were transported to disposal facilities for incineration. Sludge pumping operations began at the completion of the oil and aqueous waste removal. An estimated 52,750 gallons of sludge and 8,000 gallons of toluene were removed from the tanks and shipped for disposal at an approved facility.

Source Control: The remedies selected by the EPA included: (1) removing the tanks and their pipes and disposing of them at an approved facility; (2) conducting additional sampling at the site to determine the distribution of contaminants; (3) sampling of groundwater, surface water, and sediment near the site; and (4) assessing flood plains to determine possible effects on cleanup actions. After evaluation, the EPA issued a document in 1985 listing the final decision on the method of cleanup chosen, and in 1986 and 1987, the EPA cleaned the interiors of the three empty storage tanks and dismantled them. The pipework, foundations, and 33 drums of wastes already on the site were transported to a licensed disposal facility. Soil was excavated from two locations on the site, placed in drums, disposed of, and replaced with clean fill. Once the tanks and other materials were removed, the EPA sampled soil, groundwater, surface water, and sediments for the presence and distribution of remaining contamination at the site. A Flood Plains Assessment Report was prepared and evaluated for the site. The site was fenced at that time.

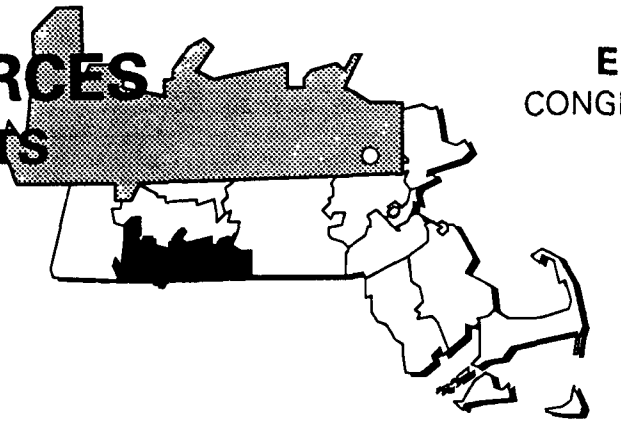
Investigation: The EPA studied the results of the sampling program to evaluate the possible human health and environmental risks. Based on this evaluation, the EPA is satisfied that the site poses no threat to human health and the environment. The site Close Out Report, scheduled to be filed in 1991, will confirm the EPA's findings.

Site Facts: In 1983, a Consent Agreement was reached with Salt Water Trust, the owners of the site. According to the agreement, the site owners would clean the south tank, and the EPA would clean the central tank. A history of complaints of odors and reports of leaks from the storage tanks on the site prompted the State and the EPA to investigate the site.

Environmental Progress

The actions described above have significantly reduced the potential of exposure to hazardous substances and removed the sources of contamination at the Plymouth Harbor/Cannon Engineering site. All cleanup activities have been completed. The site is awaiting a five-year review in 1992, and subsequent deletion from the NPL.

PSC RESOURCES
MASSACHUSETTS
EPA ID# MAD980731483



EPA REGION 1
CONGRESSIONAL DIST. 02
Hampden County
Palmer

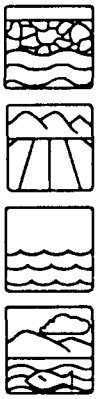
Site Description

The 3 1/2-acre PSC Resources site was a waste oil refinery and solvent recovery plant that operated in the 1970s. The facility reclaimed drained oils and solvents from Massachusetts collection points, treated them with heat, and sold them as lube oil base stock, road spray, and heavy fuel mixes. Millions of gallons of waste were left behind in tanks and lagoons when the current owner abandoned the plant in 1978. After a spill in 1982, the EPA discovered several leaking tanks and containment dikes, as well as saturated soils. Surface waters, wetlands, and groundwater are directly threatened by the waste. Approximately 4,500 people live within 3 miles of the site. The Quaboag River is about 200 feet southwest of the site and is used for swimming and fishing. The property is near a residential and commercial district and is adjacent to the town athletic field. The Palmer business district is 1/4 mile from the site.

Site Responsibility: This site is being addressed through Federal, State, and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 12/01/82
Final Date: 09/01/83

Threats and Contaminants



Shallow groundwater contamination consists mostly of volatile organic compounds (VOCs) including benzene and methylene chloride. Polychlorinated biphenyls (PCBs), including Aroclor-1248 and Aroclor-1260, and lead have been found in soil samples. The surface water and oil in the dikes contain the heavy metals arsenic and lead, as well as benzene and PCBs. Oil in a rainwater catch basin contains PCBs and tetrachloroethylene. People may be exposed to contaminants by inhaling air, coming in direct contact with or accidentally ingesting contaminated water or soil, or by eating contaminated fish. Municipal well fields for the towns of Palmer and Monson are upgradient of the site, and the threat to drinking water from groundwater contaminants has not been absolutely defined. Contaminants have been detected in the soils and shallow groundwater in the nearby wetlands. The site is located in a 100-year flood plain, providing conditions for flooding to wash contaminants from the site into the Quaboag River.

Cleanup Approach

The site is being addressed in two stages: initial actions and a long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Initial Actions: The tanks were emptied of over 1 million gallons of hazardous wastes between 1979 and 1984. In 1986, the Massachusetts Department of Environmental Quality Engineering (DEQE) cleaned and removed the tanks. The DEQE also fenced the site in 1986. Repair and reinforcement of the fence is scheduled for 1991. The repair is necessary to limit unauthorized access and to extend the fence to include the debris pile and spill area on the western and southern sides of the site. Warning signs also will be installed along the fence and on facility buildings.

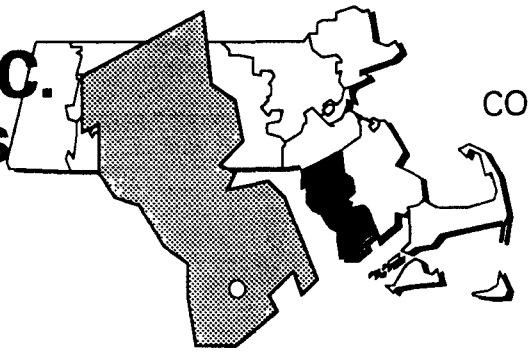
Entire Site: The DEQE is studying the nature and extent of the contamination at the site. The investigation will define the contaminants and will recommend alternatives for the final cleanup. The study is planned to be completed in 1991.

Site Facts: In 1982, acting under authority of the Clean Water Act, the EPA asked the owner to contain the oil discharge, determine the contents of 22 tanks, and investigate the possibility of groundwater contamination. The owner complied with all requests.

Environmental Progress

The removal of hazardous wastes and installation of a fence described above have reduced the potential of exposure to hazardous substances, making the PSC Resources area safer while it awaits further cleanup activities.

RE-SOLVE, INC.
MASSACHUSETTS
EPA ID# MAD980520621



EPA REGION 1
CONGRESSIONAL DIST. 10
Bristol County
North Dartsmouth

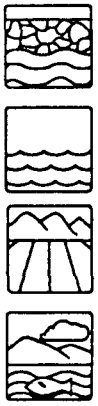
Site Description

The Re-Solve, Inc. site is a former waste chemical reclamation facility situated on 6 acres of land. Between 1956 and 1980, Re-Solve handled a variety of hazardous materials, including solvents, waste oils, organic liquids and solids, acids, alkalines, inorganic liquids and solids, and polychlorinated biphenyls (PCBs). Residues from the distillation tower, liquid sludge waste, impure solvents, and burned tires were disposed in four on-site unlined lagoons. The lagoon contents were burned periodically to reduce the volatile organic compounds (VOCs) content. An oil waste that accumulated at the bottom of the degreaser distillation still was disposed of on one portion of the site through landfarming. This oil waste also was spread throughout the site to control dust. Cooling water from the distillation tower was discharged to a shallow on-site lagoon. In 1974, the State issued Re-Solve a license to collect and dispose of hazardous waste. In 1980, the State agreed to accept Re-Solve's offer to surrender its disposal license on the condition that all hazardous waste be removed from the site. In 1981, legal action resulted in all drums, debris, and buildings being removed, but the contents of the four lagoons remained. Approximately 300 people live within a 1-mile radius of the site. Two residences are located within 150 yards of Re-Solve. The Re-Solve, Inc. site is bounded by wetlands, and the land surrounding the site is predominantly zoned for single family residential use. The bottoms of the lagoons are situated in the water table, and some contaminants have migrated to groundwater. All residences obtain their water from private wells located on their property.

Site Responsibility: This site is being addressed through a combination of Federal, State, and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 10/01/81
Final Date: 09/01/83

Threats and Contaminants



Groundwater is contaminated with VOCs, PCBs, and lead. Sediments are contaminated with PCBs and arsenic. Soil contains PCBs, arsenic, and VOCs including trichloroethylene (TCE), vinyl chloride, methylene chloride, and toluene. Surface water is contaminated with PCBs and VOCs. Fish from the river and ponds contain PCBs, zinc, and mercury. Trespassers may be threatened by coming in direct contact with or accidentally ingesting contaminated soil, sediments, groundwater, or surface water. Also, people who eat contaminated fish would be at risk. The Copicut River, located about 500 feet from the site, has been designated for the protection and propagation of fish, other aquatic life, and wildlife. The site is located over an aquifer that serves as a recharge area for part of a nearby town where a new municipal well is planned. Contaminants are moving off site in surface runoff and groundwater.

Cleanup Approach

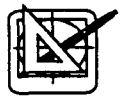
This site is being addressed in four stages: an emergency action and three long-term remedial phases focusing on controlling the sources of contamination and cleanup of the entire site.

Response Action Status

Emergency Action: In 1985, the EPA removed sludges from the lagoons and excavated approximately 16,000 cubic yards of contaminated soil for off-site disposal in a federally approved landfill.

Source Control: To control the source of the contamination at the site, the EPA selected a remedy that included removing the contents of the four unlined lagoons, excavating soil from hot spots, and excavating soil from the former oil spreading area for disposal at an off-site approved facility. The entire site was capped to prevent contact with surface and groundwater. These remedies were completed in 1987. In addition, the EPA removed 148 drums of hazardous waste. The site was fenced to limit access to the contaminated areas.

Additional Source Control Measures: The remedies selected by the EPA to prevent the migration of contaminants include excavating 22,500 cubic yards of PCB-contaminated soil located above the groundwater table, treating the soil on site by removing the contaminants by dechlorination, and then placing the soil back on site with 18 inches of gravel capping; excavating 3,000 cubic yards of PCB-contaminated sediments from wetland areas and treatment by dechlorination; conducting studies to determine if the dechlorination process can be used on a full-scale level; and restoring the wetlands. The technical specifications and design for the cleanup are being prepared by the parties potentially responsible for site contamination. The cleanup activities will commence once the design phase is completed, expected in 1992. Also, emissions from the soil excavation and treatment will be monitored, and groundwater and surface water will be monitored quarterly to evaluate the effectiveness of the cleanup.



Entire Site: Remedies selected along with source control measures to address contamination at the rest of the site include pumping the groundwater to keep the contaminant plume from moving, treating it by exposing the water to air to evaporate the contaminants, carbon filtering to recapture the contaminants, and discharging the treated water back into the aquifer; monitoring the groundwater, surface water, and wetlands; and controlling the future use of groundwater. A pilot test addressing the management of contaminant migration was completed in 1990. The design for the selected cleanup remedies, also being performed by the potentially responsible parties, is scheduled to be completed in 1992. Fish sampling will be performed at downgradient stations. Drinking wells also will be monitored for traces of contamination. The cleanup of PCB sediments will require disturbing and temporarily losing the wetlands. These effects are unavoidable; however, a wetlands restoration program will be implemented. A plan for the wetlands restoration is currently being developed.

Site Facts: A Consent Decree was signed in 1988 under which the parties potentially responsible for contamination of the site agreed to conduct the cleanup activities and to reimburse the government for past costs and future oversight costs.

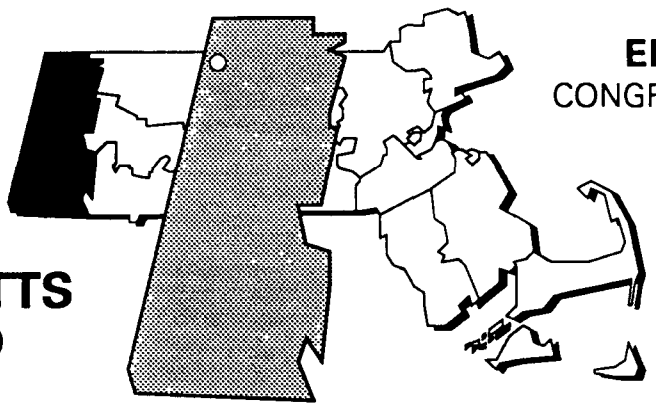
Environmental Progress

Removal of the contamination sources such as soils and sludges from the site, along with restricting access to the site with a security fence, have reduced the health risks and environmental threats posed by the Re-Solve, Inc. site while design of final cleanup actions are underway.

ROSE DISPOSAL PIT

MASSACHUSETTS

EPA ID# MAD980524169



EPA REGION 1
CONGRESSIONAL DIST. 01
Berkshire County
Lanesborough

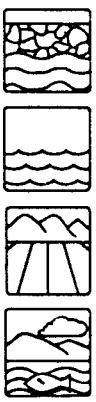
Site Description

The Rose Disposal Pit site is a 1 1/2-acre waste disposal area. The site occupies a section of a 14-acre residential lot bordering Balance Rock State Park, which is forest land, and the former Balance Rock Cafe; cropland and pastures also are nearby. Beginning in 1951 and continuing through 1959, waste oils and solvents from the General Electric Plant in nearby Pittsfield were disposed of in an open trench at the site. In 1980, the State Department of Environmental Quality Engineering inspected the site and found 15,000 cubic yards of soil contaminated with polychlorinated biphenyls (PCBs) and volatile organic compounds (VOCs). Two plumes of contaminated groundwater were discovered moving to the east and south away from the disposal area. Approximately 100 people live within a mile of the site and may be affected by the contaminated drinking water.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 10/01/84
Final Date: 06/01/86

Threats and Contaminants



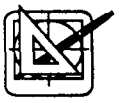
The groundwater is contaminated with PCBs and VOCs including trichloroethylene (TCE), benzene, and vinyl chloride. The sediments, soil, and surface water at the site and a nearby wetland are contaminated with PCBs and VOCs. VOCs, as well as vinyl chloride, a known human carcinogen, have been found in downgradient drinking wells. The contaminant plumes extend from the pit eastward into the park and to the south, to be carried off by a small unnamed stream.

Cleanup Approach

This site is being addressed in two stages: initial actions and a long-term remedial phase focusing on management and control of contaminant migration.

Response Action Status

Initial Actions: GE erected a storm fence and covered the site with plastic in 1984. GE then pumped out a pocket of contaminated oil found beneath the surface to prevent rain or snow from further spreading the contamination. An alternate permanent water supply also was provided to the restaurant and residences affected by the plume.



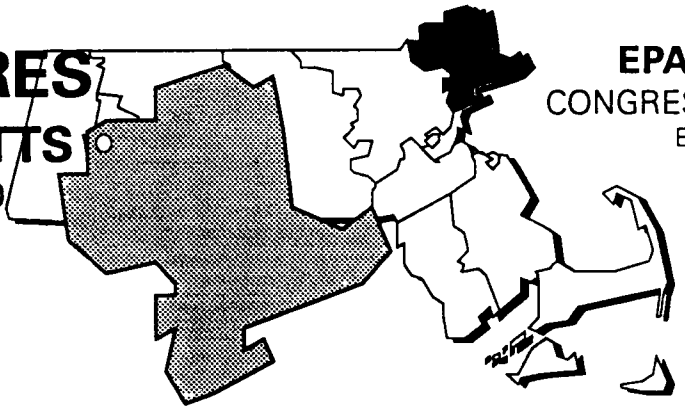
Source Control and Migration Management: The selected remedy is intended to control the source of contamination and control and manage the migration of contaminants. GE will perform all cleanup work. Source control includes excavation and on-site incineration of approximately 15,000 cubic yards of contaminated soil and sediment. Soils excavated will be those above the water table that contain concentrated contaminants. Source control remediation is estimated to take two years after the design is completed. Migration of contaminants will be controlled by active restoration of the shallow aquifer by air filtering the VOCs to a gas and then using carbon adsorption to remove the now-airborne contaminants. Groundwater will be treated to reduce contaminants to levels that will meet drinking water standards. Sediments and surface water in the small pond located near the disposal area also will be treated, and the pond will be restored to its original wetlands character after remediation. Treatment of the VOCs will render the PCBs relatively immobile in the saturated zone of the disposal area. Since PCBs will be present in the groundwater, institutional controls including deed restrictions will be needed to prevent groundwater use and any excavation below the water table within the disposal area. These remedial activities are scheduled to begin in 1992 after design work is completed. Incineration will involve the use of an innovative form of on-site incineration that will include an initial thermal extraction phase instead of a chemical extraction phase to separate contaminants from soil.

Site Facts: In 1984, the EPA issued a joint enforcement order requiring GE to conduct removal activities at the site. In 1989, the EPA and GE signed a Consent Decree to perform the cleanup and to reimburse the EPA for past and future oversight costs.

Environmental Progress

The installation of a fence, the covering of the site, and the provision of an alternate water supply have reduced the potential of exposure to hazardous materials, making the Rose Disposal site safer while it awaits the planned actions to control the source and migration of contaminants and restoration of the site soils and nearby wetlands.

SALEM ACRES
MASSACHUSETTS
EPA ID# MAD980525240



EPA REGION 1
CONGRESSIONAL DIST. 06
Essex County
Salem

Site Description

From 1946 through 1969, the 262-acre Salem Acres site received sludge, grit, and grease from the South Essex Sewerage District through an agreement with the owners. The site also received tannery waste. The sludge was placed in eight unlined, uncovered disposal pits on approximately 4 acres. Polychlorinated biphenyls (PCBs), volatile and semi-volatile organic compounds, arsenic, and chromium were found to be present in the soils. Residential housing borders the site on the south and the east. Approximately 65,000 people live within 1 mile, and 127,000 people live within 3 miles of the site. One of the disposal pits is approximately 20 feet from Strongwater Brook. The site lies on the divide of two drainage basins that channel both surface water and groundwater directly into two major aquifers.

Site Responsibility: The site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 10/01/84
Final Date: 06/01/86

Threats and Contaminants

The on-site soils and sludge are contaminated with PCBs, volatile and semi-volatile organic compounds, arsenic, and chromium. The sludge pit areas now are fenced, and access to them is restricted. Emergency capping of the pits has largely eliminated them as a current source of exposure.

Cleanup Approach

The site is being addressed in two stages: initial actions and a long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Initial Actions: In 1988, the EPA covered the sludge pits with a synthetic cap, removed wastes from the disposal pits to an off-site storage facility, and constructed concrete cut-off walls to prevent further releases into the wetlands. In 1990, repairs were made to a monitoring well and a security fence on site, and signs were posted to further restrict access.

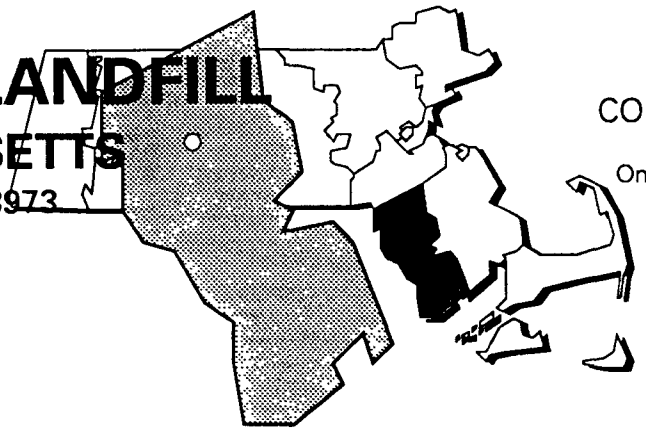
Entire Site: The South Essex Sewerage District is conducting an investigation into the nature and extent of the soil and sludge contamination. The investigation will define the contaminants of concern and will recommend alternatives for final cleanup. The investigation is planned to be completed in 1991.

Site Facts: On May 26, 1987, the EPA signed a Consent Order with the South Essex Sewerage District to have the District perform the studies to examine the nature and extent of contamination and the technical options for cleanup.

Environmental Progress

The EPA has assessed conditions at Salem Acres and has determined that the initial capping actions, combined with the site security measures taken, have reduced the potential for exposure to contamination while the site awaits the results of the investigation for final cleanup alternatives.

SHPACK LANDFILL
MASSACHUSETTS
EPA ID# MAD980503973



EPA REGION 1
CONGRESSIONAL DIST. 04
Bristol County
On the Attleboro/Norton town line

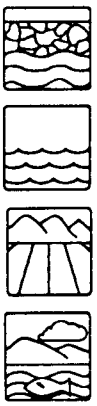
Site Description

The Shpack Landfill covers 8 acres, 5 1/2 acres of which are within the Town of Norton, and the remaining 2 1/2 acres are in the City of Attleboro. The landfill was operated from 1946 until 1965, when a court order forced its closing. This landfill received domestic and industrial waste, including inorganic and organic chemicals, as well as radioactive waste. The area near the site includes a wooded swamp. Approximately 40,000 people live within a 3-mile radius of the site. Municipal water supplies for both townships do not extend to the area around the site. Therefore, residents in this area use private drinking water wells, most of which withdraw water from the bedrock aquifer. The distance from Shpack Landfill to the nearest residential well is about 150 feet. There are 27 private wells within a mile of the site that serve 103 people. The two municipal water supply well fields for Norton are situated in the shallow aquifer and are located 3 miles east and 5 1/4 miles northeast of the area. Municipal well fields for Attleboro also are completed in the shallow aquifer and are located 12,000 feet and 24,000 feet west of the study area. The Shpack Landfill directly borders the currently operating 50-acre Attleboro Landfill.

Site Responsibility: The site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 10/01/84
Final Date: 06/01/86

Threats and Contaminants



The groundwater has been shown to contain volatile organic compounds (VOCs), including vinyl chloride, and trichloroethylene (TCE), as well as heavy metals, including chromium, barium, copper, nickel, manganese, arsenic, cadmium, and lead. Sediments on the edge of the swamp and soils contain radionuclides including radium and uranium. Surface water in the swampy area is contaminated with radium and alpha and beta particles, as well as organic compounds. The site is fenced to limit access. People who trespass on the site may be exposed to contamination by coming in direct contact with or accidentally ingesting contaminated groundwater, surface water, soil, or sediments. In addition, contaminants may be transported off site by flooding of the swamp.

Cleanup Approach

The site is being addressed in a single long-term remedial phase focusing on cleanup alternatives for the entire site.

Response Action Status

Entire Site: An investigation into the nature and extent of the contamination at the site was begun by the potentially responsible parties in 1990. Through sampling and characterization of soil, sediments, surface water, and groundwater, the investigation will define the contaminants of concern and will recommend alternatives for the final cleanup. The investigation is planned to be completed in 1993.

Site Facts: The Shpack Landfill currently is under the supervision of the U.S. Department of Energy.

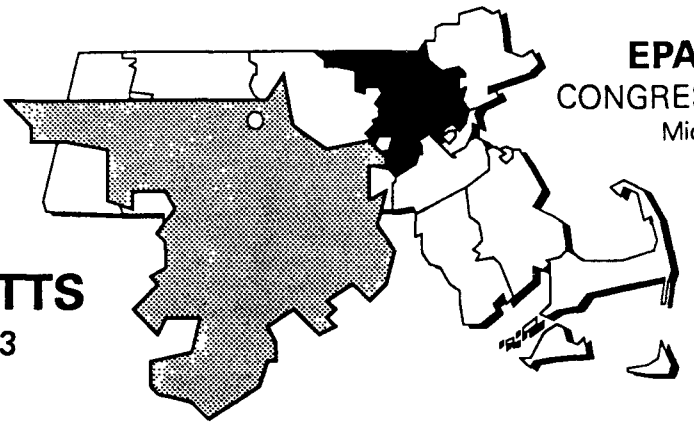
Environmental Progress

Fencing the area has reduced the potential of exposure to hazardous substances on the Shpack Landfill site while the investigation into the cleanup alternatives is taking place.

SILRESIM CHEMICAL CORP.

MASSACHUSETTS

EPA ID# MAD000192393



EPA REGION 1
CONGRESSIONAL DIST. 05
Middlesex County
Lowell

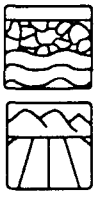
Site Description

The Silresim Chemical Corporation site covers approximately 5 acres in an industrial area. Starting in 1971, Silresim began reclaiming a variety of chemical wastes, waste oil, solvents, and sludges containing heavy metals. In 1977, Silresim declared bankruptcy and abandoned the site, leaving behind 30,000 decaying drums and several large storage tanks. The State began to clean up the site in 1978. The site is located a mile south of the central business district of Lowell and several hundred feet from the nearest residential area. Approximately 10,000 people live within 1 mile, and an estimated 24,000 people live within 3 miles of the site. Groundwater flows generally to the northwest towards Meadow Brook, which drains into the Concord and then the Merrimack River. The Merrimack River is the source of water for three neighboring cities.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 07/01/82
Final Date: 09/01/83

Threats and Contaminants



The groundwater is contaminated with volatile organic compounds (VOCs), semi-volatile organic compounds, pesticides, polychlorinated biphenyls (PCBs), and heavy metals. The soil is polluted with VOCs, semi-volatile organic compounds, pesticides, and PCBs. Low levels of dioxin also are present in the soil. People could be exposed to contaminants by coming in contact with off-site soils and groundwater.

Cleanup Approach

This site is being addressed in two stages: interim actions and a long-term remedial phase focusing on cleanup of the entire site.

Response Action Status

Interim Actions: Before the site was listed on the NPL, the State removed all chemical wastes in aboveground storage containers, fenced the site, and dismantled buildings. In 1983, the EPA monitored the air and sampled soils, finding contamination both on and off site. The EPA raised the height of the fence from 6 to 8 feet. The EPA covered highly contaminated areas with 9 inches of crushed gravel and a clay cap. This work was finished in 1984. In 1986, damage to the original fence was repaired. Subsequent sampling revealed an additional area of soil contamination that the EPA then enclosed. In 1986, the EPA discovered dioxin, so the fence was relocated to prevent public access, and a temporary gravel cover was laid over the contaminated soil to prevent contact.

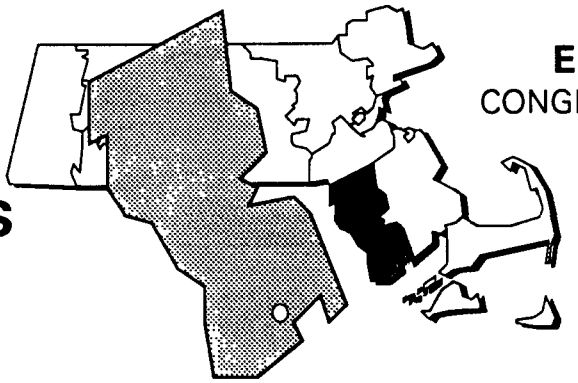
Entire Site: The potentially responsible parties are conducting investigations into the contamination and, with the EPA, will assess the alternative technologies for cleanup. Activities include groundwater, surface water and sediments sampling; monitoring; well installation; and sampling vents for air contamination. Surface soil testing and sampling beneath the clay cap and outside the fence will determine the extent of soil contamination. These activities are scheduled to end in 1991, and remedies for final cleanup will be selected shortly thereafter.

Site Facts: The EPA negotiated with a group of the parties potentially responsible for site contamination to conduct the studies to determine the nature and extent of contamination and to develop alternative cleanup technologies. In the past, some residents and doctors of the community had attributed health effects to site contamination.

Environmental Progress

Initial actions to fence the site and to cap or cover areas of contamination have reduced the potential for accidental exposure and the further migration of contamination from the Silresim Chemical site. These actions have eliminated the immediate threats posed by the site while ongoing investigations identify alternatives for addressing groundwater and soil contamination.

SULLIVAN'S LEDGE
MASSACHUSETTS
EPA ID# MAD980731343



EPA REGION 1
CONGRESSIONAL DIST. 12
Bristol County
New Bedford

Site Description

The 12-acre Sullivan's Ledge disposal area, in the northwestern corner of New Bedford, operated as a quarry until about 1932. In 1935, the City of New Bedford acquired the site through tax title foreclosure. Between the 1940s and the 1970s, local industries used the quarry pits and adjacent areas for disposal of hazardous material and other wastes including electrical capacitors, fuel oil, volatile liquids, tires, scrap rubber, demolition materials, and brush and trees. After a fire at the site in the 1970s, the City backfilled the only existing open pit and covered all exposed refuse. In 1982, when the Massachusetts Department of Public Works drilled test borings as part of a plan to build a commuter parking lot, electrical capacitors, which may have caused polychlorinated biphenyl (PCBs) contamination, were unearthed. Approximately 98,500 people live within 3 miles of the site in this residential area. Within a mile of the site are two nursing homes and three schools. The New Bedford Municipal Golf Course is immediately north of the site. An unnamed stream borders the site and discharges into Middle Marsh, which is on the golf course. Immediately north of the marsh lie railroad tracks, the Apponagansett Swamp, and the City of New Bedford municipal landfill.

Site Responsibility: The site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 09/01/83
Final Date: 09/01/84

Threats and Contaminants

In 1982, the EPA detected PCBs in ambient air. Volatile organic compounds (VOCs) in the on-site and immediately off-site groundwater increase with depth. Inorganic compounds and PCBs also are present in the groundwater. The soil is contaminated with PCBs and polycyclic aromatic hydrocarbons (PAHs). The soils along the eastern and southern boundaries contain the highest contaminant concentrations. Soils have eroded from the site into the unnamed stream and have been transported from the site. Sediments in the unnamed stream, Middle Marsh, four golf course water hazards, and a portion of the Apponagansett Swamp are contaminated with PCBs. People may become exposed to the contaminated dusts stirred up at the site. At the heavily used golf course, people may be exposed to contaminants in soil and sediments, particularly from dry intermittent stream beds.

Cleanup Approach

The site is being cleaned up in three stages: an initial action and two long-term remedial phases aimed at cleanup of the entire site and the Middle Marsh.

Response Action Status

Initial Action: The City of New Bedford constructed a fence around the Sullivan's Ledge Landfill in 1984 to limit the potential for exposure to hazardous materials at the site.

Entire Site: The EPA has chosen the following remedies for cleaning up the site: (1) prepare the site for cleanup activities by establishing security measures, connecting the site to power lines, and furnishing sanitary facilities; (2) excavate, solidify, and dispose of soils on the site; (3) excavate, solidify, and dispose of sediments from the stream and the golf course water hazards; (4) construct an impermeable cap over an 11-acre area to cover the quarry pits and contain the contaminated surface soils and sediments that would be solidified and placed on site; (5) divert and line a portion of the unnamed stream to prevent water from being pulled into extraction wells; (6) install an active pumping system to collect contaminated shallow bedrock groundwater, a passive collection system to collect contaminated seeps and shallow groundwater, and a treatment system to treat collected groundwater; (7) restore and enhance the wetlands to reasonably similar hydrologic and botanical conditions that existed prior to excavation; (8) monitor the site with 5-year reviews; and (9) use institutional controls to ensure that the bedrock groundwater will not be used for drinking water, since it cannot be cleaned to drinking water standards. These actions will begin to be designed in 1991, and cleanup work is scheduled to begin in 1993.

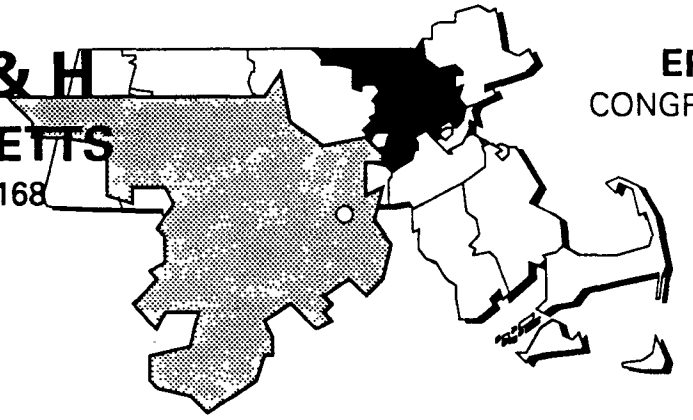
Middle Marsh: In 1989, the EPA began a study of the contamination in the Middle Marsh sediments. Results of the studies were released in 1991 and indicated significant PCB accumulation in wildlife in and around Middle Marsh. While sediment in the Marsh also were found to be heavily contaminated with PCBs, the threat to human health was judged to be negligible. A decision on the appropriate cleanup remedy is expected to be reached in late 1991.

Site Facts: An agreement was reached with 14 potentially responsible parties to pay for cleanup of the Sulllivan's Ledge disposal area.

Environmental Progress

Fencing the area has limited the potential for exposure to hazardous materials at the Sullivan's Ledge Landfill while awaiting further cleanup actions to address contaminated sediments and groundwater resources.

WELLS G & H
MASSACHUSETTS
EPA ID# MAD980732168



EPA REGION 1
CONGRESSIONAL DIST. 07
Middlesex County
City of Woburn

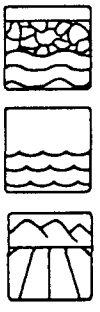
Site Description

Wells G & H were two municipal wells developed in 1964 and 1967 to supplement the water supply of the City of Woburn. The site covers a total area of 330 acres. The wells supplied 25% of the city's drinking water. In 1979, city police discovered several 55-gallon drums of industrial waste abandoned on a vacant lot in the vicinity of the site; these drums subsequently were removed. As a result of this finding, the nearby wells were tested and found to be contaminated. Both of the wells were shut down in 1979. The population of Woburn is approximately 36,600 people. The area surrounding the site is predominantly residential; some non-residential properties are fenced to limit unauthorized access. The area includes commercial and industrial parks, as well as greenhouses and many residential gardens. The Aberjona River flows through the middle of the site. Surface water runoff from the site is directed through drainage systems toward the river and its tributaries. Many of the areas around the site are used for recreation.

Site Responsibility: The site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 12/01/82
Final Date: 09/01/83

Threats and Contaminants



The groundwater is contaminated with volatile organic compounds (VOCs) including trichloroethylene (TCE), heavy metals including lead, and polychlorinated biphenyls (PCBs). Sediments are contaminated with polycyclic aromatic hydrocarbons (PAHs) and heavy metals such as chromium, zinc, mercury, and arsenic. Soil is contaminated with PAHs, PCBs, VOCs, and heavy metals. A pond that receives drainage from Wildwood Industrial Park is used by children for fishing and swimming. Children also use an undeveloped portion of Olympia Nominee Trust, located near the site, for riding dirt bikes. People are at risk if they accidentally touch or swallow contaminated surface water, groundwater, soil, or sediments. The site is located on land that serves as a recharge area for the aquifer from which the Woburn Municipal Wells G & H drew water.

Cleanup Approach

The site is being addressed in four stages: immediate actions and three long-term remedial phases focusing on source control and contaminant migration and cleanup alternatives for the central aquifer and the Aberjona River.

Response Action Status

Immediate Actions: The party potentially responsible for site contamination secured the site with a fence and a guard. Drums containing PCB sludge and solid materials contaminated with PCBs, as well as a pool of contaminated liquid located near the aquifer, were removed to an approved facility. The potentially responsible parties were required to investigate and remove the pure tetrachlorothene found in a well on the site.

Source Control and Contaminant Migration: The EPA's selected remedy includes excavating and incinerating 2,100 cubic yards of contaminated soils on site and backfilling the excavated areas; treating additional contaminated soil in place by extracting soil vapors for treatment with activated carbon; and pumping contaminated groundwater from the aquifers and removing the contaminants by using a stream of air that is forced through the water. Contaminants removed by the air stream will be further treated prior to being released into the atmosphere. The EPA negotiated with the potentially responsible parties to prepare the technical specifications and design for the cleanup. Five separate properties on the site were found to be sources of contamination under a Consent Order between the EPA and the responsible parties. The parties have begun pre-design cleanup activities at two of the properties that are expected to be completed by late 1991. Pre-design work at two of the remaining three properties also is scheduled to begin and is expected to be completed in 1993.

Central Aquifer: Three of the five parties potentially responsible for site contamination are performing a study of the nature and extent of contamination in the central aquifer area beyond the various other source area property boundaries within the Wells G & H area. Completion of the study is scheduled for 1993.

Aberjona River Study: The EPA is conducting an investigation into the risk to human health and the environment within the Aberjona River and the upper Mystic Lake. If risks are found, a more complete investigation of contamination and cleanup alternatives will be undertaken. The investigation is expected to be completed in 1993.

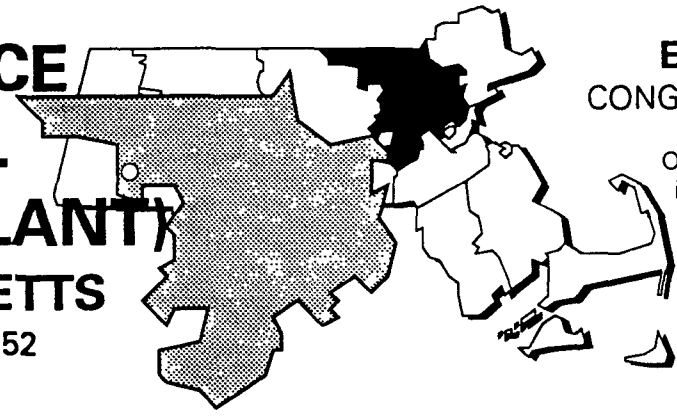
Site Facts: The EPA has signed a Consent Decree with three of the potentially responsible parties to conduct a study of contamination at the Central Aquifer area.

Environmental Progress

The removal of contaminated materials and the fencing of the Wells G & H site have reduced the potential for exposure to hazardous materials at the site while it awaits the commencement of the soil treatment remedy and the final results of the investigation into the possible alternatives for cleanup of the remaining site contamination.

W. R. GRACE & CO., INC. (ACTON PLANT)
MASSACHUSETTS

EPA ID# MAD001002252



EPA REGION 1
CONGRESSIONAL DIST. 05
Middlesex County
Off Independence Road
in Acton and Concord

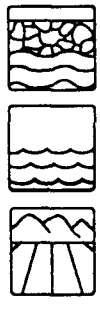
Site Description

The W. R. Grace and Company site covers approximately 200 acres. The site was the former location of the American Cyanamid Company and the Dewey & Almy Chemical Company. These companies produced sealant products for rubber containers, latex products, plasticizers, resins, and other products. Operations at the W. R. Grace facility included the production of materials used to make concrete, container sealing compounds, latex products, and paper and plastic battery separators. Effluent wastes from these operations flowed into several unlined lagoons (the Primary Lagoon, Secondary Lagoon, North Lagoon, and Emergency Lagoon), and solid and hazardous wastes were buried in or placed onto an on-site industrial landfill and several other disposal areas. These other waste sites include the Battery Separator Lagoons, the Battery Separator Chip Pile, the Boil Lagoon, and the Tank Car Area. In addition, the by-products of some chemical processes were disposed of in the Blowdown Pit. Discharge to all lagoons and the Battery Separator Area ceased in 1980. Investigations in 1978 indicated that two municipal wells, Assabet #1 and #2, were contaminated. As a result of these findings, the Town took precautionary action and closed the two wells. The site is bounded in part by Fort Pond Brook and by the Assabet River.

Site Responsibility: This site is being addressed through Federal and potentially responsible parties' actions.

NPL LISTING HISTORY
Proposed Date: 12/30/82
Final Date: 09/08/83

Threats and Contaminants



Groundwater is contaminated with volatile organic compounds (VOCs) and heavy metals including lead, arsenic, chromium, and nickel. Sediments are contaminated with cadmium. The soil and sludge are contaminated with arsenic, vinyl chloride, and benzene. Trespassers may be at risk by coming in direct contact with or accidentally ingesting contaminated groundwater, surface water, sediments, soil, or sludge.

Cleanup Approach

The site is being addressed in three stages: interim actions and two long-term remedial phases focusing on aquifer restoration and landfill and lagoon closure.

Response Action Status

Interim Actions: The parties potentially responsible for site contamination removed tanks from the site in 1982 and 1983.

Aquifer Restoration: The potentially responsible parties have installed an aquifer restoration facility. This has been in operation since 1985 to stop the discharge of contaminated groundwater into the Assabet River, Fort Pond Brook, and various other ponds.

Landfill and Lagoon Closure: The EPA's recommended cleanup plan includes: (1) excavating and transporting off-site for incineration the highly contaminated material from the Blowdown Pit; (2) excavating and stabilizing the material in the Blowdown Pit, the Primary Lagoon, Secondary Lagoon, North Lagoon, and Emergency Lagoon by mixing it with cement, lime, and fly ash to form a solid; (3) excavating the soils from the Battery Separator Lagoons, Boiler Lagoon, and Tank Car area; (4) placing both the stabilized and non-stabilized materials excavated from the site in the existing industrial landfill and covering these materials with a cap to prevent surface water or rain water from coming into contact with the buried contaminants; (5) closing the Chip Pile area; (6) modifying the Aquifer Restoration System to address emission controls; and (7) monitoring each area. The design for this remedy is being conducted in phases, the final portion of which is expected to be completed in 1993.

Site Facts: The company entered into a Consent Decree with the EPA in 1980 to conduct a study of the site and to carry out cleanup activities. Since 1973, residents in South Acton have filed complaints about periodic odors and irritants in the air around the W. R. Grace plant.

Environmental Progress

The interim cleanup action involving removal of tanks has reduced the potential for exposure to hazardous substances in groundwater and leaking tanks, making the W. R. Grace area safer while selected cleanup activities are being designed and constructed.

Glossary: Terms Used in the Fact Sheets

Terms Used in the NPL Book

This glossary defines terms used throughout the NPL Volumes. The terms and abbreviations contained in this glossary apply specifically to work performed under the Superfund program in the context of hazardous waste management. These terms may have other meanings when used in a different context.

Acids: Substances, characterized by low pH (less than 7.0), that are used in chemical manufacturing. Acids in high concentration can be very corrosive and react with many inorganic and organic substances. These reactions possibly may create toxic compounds or release heavy metal contaminants that remain in the environment long after the acid is neutralized.

Administrative Order On Consent: A legal and enforceable agreement between the EPA and the parties potentially responsible for site contamination. Under the terms of the Order, the potentially responsible parties (PRPs) agree to perform or pay for site studies or cleanups. It also describes the oversight rules, responsibilities, and enforcement options that the government may exercise in the event of non-compliance by potentially responsible parties. This Order is signed by PRPs and the government; it does not require approval by a judge.

Administrative Order [Unilateral]: A legally binding document issued by the EPA, directing the parties potentially responsible to perform site cleanups or studies (generally, the EPA does not issue Unilateral Orders for site studies).

Aeration: A process that promotes breakdown of contaminants in soil or water by exposing them to air.

Agency for Toxic Substances and Disease Registry (ATSDR): The Federal agency within the U.S. Public Health Service charged with carrying out the health-related responsibilities of CERCLA.

Air Stripping: A process whereby volatile organic chemicals (VOCs) are removed from contaminated material by forcing a stream of air through it in a pressurized vessel. The contaminants are evaporated into the air stream. The air may be further treated before it is released into the atmosphere.

Ambient Air: Any unconfined part of the atmosphere. Refers to the air that may be inhaled by workers or residents in the vicinity of contaminated air sources.

Aquifer: An underground layer of rock, sand, or gravel capable of storing water within cracks and pore spaces, or between grains. When water contained within an aquifer is of sufficient quantity and quality, it can be tapped and used for drinking or other purposes. The water contained in the aquifer is called groundwater. A sole source aquifer supplies 50% or more of the drinking water of an area.

Artesian (Well): A well made by drilling into the earth until water is reached, which, from internal pressure, flows up like a fountain.

GLOSSARY

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

Background Level: The amount of a substance typically found in the air, water, or soil from natural, as opposed to human, sources.

Baghouse Dust: Dust accumulated in removing particulates from the air by passing it through cloth bags in an enclosure.

Bases: Substances characterized by high pH (greater than 7.0), which tend to be corrosive in chemical reactions. When bases are mixed with acids, they neutralize each other, forming salts.

Berm: A ledge, wall, or a mound of earth used to prevent the migration of contaminants.

Bioaccumulate: The process by which some contaminants or toxic chemicals gradually collect and increase in concentration in living tissue, such as in plants, fish, or people, as they breathe contaminated air, drink contaminated water, or eat contaminated food.

Biological Treatment: The use of bacteria or other microbial organisms to break down toxic organic materials into carbon dioxide and water.

Bioremediation: A cleanup process using naturally occurring or specially cultivated microorganisms to digest contaminants and break them down into non-hazardous components.

Bog: A type of wetland that is covered with peat moss deposits. Bogs depend primarily on moisture from the air for their water source, are usually acidic, and are rich in plant residue [see Wetland].

Boom: A floating device used to contain oil floating on a body of water or to restrict the potential overflow of waste liquids from containment structures.

Borehole: A hole that is drilled into the ground and used to sample soil or groundwater.

Borrow Pit: An excavated area where soil, sand, or gravel has been dug up for use elsewhere.

Cap: A layer of material, such as clay or a synthetic material, used to prevent rainwater from penetrating and spreading contaminated materials. The surface of the cap generally is mounded or sloped so water will drain off.

Carbon Adsorption: A treatment system in which contaminants are removed from groundwater and surface water by forcing water through tanks containing activated carbon, a specially treated material that attracts and holds or retains contaminants.

Carbon Disulfide: A degreasing agent formerly used extensively for parts washing. This compound has both inorganic and organic properties, which increase cleaning efficiency. However, these properties also cause chemical reactions that increase the hazard to human health and the environment.

Carbon Treatment: [see Carbon Adsorption].

Cell: In solid waste disposal, one of a series of holes in a landfill where waste is dumped, compacted, and covered with layers of dirt.

CERCLA: [see Comprehensive Environmental Response, Compensation, and Liability Act].

Characterization: The sampling, monitoring, and analysis of a site to determine the

extent and nature of toxic releases. Characterization provides the basis for acquiring the necessary technical information to develop, screen, analyze, and select appropriate cleanup techniques.

Chemical Fixation: The use of chemicals to bind contaminants, thereby reducing the potential for leaching or other movement.

Chromated Copper Arsenate: An insecticide/herbicide formed from salts of three toxic metals: copper, chromium, and arsenic. This salt is used extensively as a wood preservative in pressure-treating operations. It is highly toxic and water-soluble, making it a relatively mobile contaminant in the environment.

Cleanup: Actions taken to eliminate a release or threat of release of a hazardous substance. The term "cleanup" sometimes is used interchangeably with the terms remedial action, removal action, response action, or corrective action.

Closure: The process by which a landfill stops accepting wastes and is shut down, under Federal guidelines that ensure the protection of the public and the environment.

Comment Period: A specific interval during which the public can review and comment on various documents and EPA actions related to site cleanup. For example, a comment period is provided when the EPA proposes to add sites to the NPL. There is minimum 3-week comment period for community members to review and comment on the remedy proposed to clean up a site.

Community Relations: The EPA effort to establish and maintain two-way communication with the public. Goals of community relations programs include creating an understanding of EPA programs and related actions, assuring public input into decision-making processes related to affected communities, and making certain that the Agency is aware of, and responsive to, public concerns. Specific community relations activities are required in relation to Superfund cleanup actions [see Comment Period].

Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA): Congress enacted the CERCLA, known as Superfund, in 1980 to respond directly to hazardous waste problems that may pose a threat to the public health and the environment. The EPA administers the Superfund program.

Confluence: The place where two bodies of water, such as streams or rivers, come together.

Consent Decree: A legal document, approved and issued by a judge, formalizing an agreement between the EPA and the parties potentially responsible for site contamination. The decree describes cleanup actions that the potentially responsible parties are required to perform and/or the costs incurred by the government that the parties will reimburse, as well as the roles, responsibilities, and enforcement options that the government may exercise in the event of non-compliance by potentially responsible parties. If a settlement between the EPA and a potentially responsible party includes cleanup actions, it must be in the form of a Consent Decree. A Consent Decree is subject to a public comment period.

Consent Order: [see Administrative Order on Consent].

Containment: The process of enclosing or containing hazardous substances in a structure, typically in a pond or a lagoon, to prevent the migration of contaminants into the environment.

GLOSSARY

Contaminant: Any physical, chemical, biological, or radiological material or substance whose quantity, location, or nature produces undesirable health or environmental effects.

Contingency Plan: A document setting out an organized, planned, and coordinated course of action to be followed in case of a fire, explosion, or other accident that releases toxic chemicals, hazardous wastes, or radioactive materials into the environment.

Cooperative Agreement: A contract between the EPA and the States, wherein a State agrees to manage or monitor certain site cleanup responsibilities and other activities on a cost-sharing basis.

Cost Recovery: A legal process by which potentially responsible parties can be required to pay back the Superfund program for money it spends on any cleanup actions [see Potentially Responsible Parties].

Cover: Vegetation or other material placed over a landfill or other waste material. It can be designed to reduce movement of water into the waste and to prevent erosion that could cause the movement of contaminants.

Creosotes: Chemicals used in wood preserving operations and produced by distillation of tar, including polycyclic aromatic hydrocarbons and polynuclear aromatic hydrocarbons [see PAHs and PNAs]. Contaminating sediments, soils, and surface water, creosotes may cause skin ulcerations and cancer through prolonged exposure.

Culvert: A pipe used for drainage under a road, railroad track, path, or through an embankment.

Decommission: To revoke a license to operate and take out of service.

Degradation: The process by which a chemical is reduced to a less complex form.

Degrease: To remove grease from wastes, soils, or chemicals, usually using solvents.

De minimis: This legal phrase pertains to settlements with parties who contributed small amounts of hazardous waste to a site. This process allows the EPA to settle with small, or *de minimis* contributors, as a single group rather than as individuals, saving time, money, and effort.

Dewater: To remove water from wastes, soils, or chemicals.

Dike: A low wall that can act as a barrier to prevent a spill from spreading.

Disposal: Final placement or destruction of toxic, radioactive, or other wastes; surplus or banned pesticides or other chemicals; polluted soils; and drums containing hazardous materials. Disposal may be accomplished through the use of approved secure landfills, surface impoundments, land farming, deep well injection, or incineration.

Downgradient: A downward hydrologic slope that causes groundwater to move toward lower elevations. Therefore, wells *downgradient* of a contaminated groundwater source are prone to receiving pollutants.

Effluent: Wastewater, treated or untreated, that flows out of a treatment plant, sewer, or industrial outfall. Generally refers to wastes discharged into surface waters.

Emission: Pollution discharged into the atmosphere from smokestacks, other vents, and surface areas of commercial or industrial facilities.

Emulsifiers: Substances that help in mixing materials that do not normally mix; e.g., oil and water.

Endangerment Assessment: A study conducted to determine the risks posed to public health or the environment by contamination at NPL sites. The EPA or the State conducts the study when a legal action is to be taken to direct the potentially responsible parties to clean up a site or pay for the cleanup. An endangerment assessment supplements an investigation of the site hazards.

Enforcement: EPA, State, or local legal actions taken against parties to facilitate settlements; to compel compliance with laws, rules, regulations, or agreements; and/or to obtain penalties or criminal sanctions for violations. Enforcement procedures may vary, depending on the specific requirements of different environmental laws and related regulatory requirements. Under CERCLA, for example, the EPA will seek to require potentially responsible parties to clean up a Superfund site or pay for the cleanup [see Cost Recovery].

Erosion: The wearing away of land surface by wind or water. Erosion occurs naturally from weather or surface runoff, but can be intensified by such land-related practices as farming, residential or industrial development, road building, or timber-cutting. Erosion may spread surface contamination to off-site locations.

Estuary (estuarine): Areas where fresh water from rivers and salt water from nearshore ocean waters are mixed. These areas may include bays, mouths of rivers, salt marshes, and lagoons. These water ecosystems shelter and feed marine life, birds, and wildlife.

Evaporation Ponds: Areas where sewage sludge or other watery wastes are dumped and allowed to dry out.

Feasibility Study: The analysis of the potential cleanup alternatives for a site. The feasibility study usually starts as soon as the remedial investigation is underway; together, they are commonly referred to as the RI/FS [see Remedial Investigation].

Filtration: A treatment process for removing solid (particulate) matter from water by passing the water through sand, activated carbon, or a man-made filter. The process is often used to remove particles that contain contaminants.

Flood Plain: An area along a river, formed from sediment deposited by floods. Flood plains periodically are innundated by natural floods, which can spread contamination.

Flue Gas: The air that is emitted from a chimney after combustion in the burner occurs. The gas can include nitrogen oxides, carbon oxides, water vapor, sulfur oxides, particles, and many chemical pollutants.

Fly Ash: Non-combustible residue that results from the combustion of flue gases. It can include nitrogen oxides, carbon oxides, water vapor, sulfur oxides, as well as many other chemical pollutants.

French Drain System: A crushed rock drain system constructed of perforated pipes, which is used to drain and disperse wastewater.

Gasification (coal): The conversion of soft coal into gas for use as a fuel.

Generator: A facility that emits pollutants into the air or releases hazardous wastes into water or soil.

Good Faith Offer: A voluntary offer, generally in response to a Special Notice letter, made by a potentially responsible party, consisting of a written proposal demonstrating a potentially responsible party's qualifications

and willingness to perform a site study or cleanup.

Groundwater: Underground water that fills pores in soils or openings in rocks to the point of saturation. In aquifers, groundwater occurs in sufficient quantities for use as drinking and irrigation water and other purposes.

Groundwater Quality Assessment: The process of analyzing the chemical characteristics of groundwater to determine whether any hazardous materials exist.

Halogens: Reactive non-metals, such as chlorine and bromine. Halogens are very good oxidizing agents and, therefore, have many industrial uses. They are rarely found by themselves; however, many chemicals such as polychlorinated biphenyls (PCBs), some volatile organic compounds (VOCs), and dioxin are reactive because of the presence of halogens.

Hazard Ranking System (HRS): The principal screening tool used by the EPA to evaluate relative risks to public health and the environment associated with abandoned or uncontrolled hazardous waste sites. The HRS calculates a score based on the potential of hazardous substances spreading from the site through the air, surface water, or groundwater and on other factors such as nearby population. The HRS score is the primary factor in deciding if the site should be on the NPL.

Hazardous Waste: By-products of society that can pose a substantial present or potential hazard to human health and the environment when improperly managed. It possesses at least one of four characteristics (ignitability, corrosivity, reactivity, or toxicity), or appears on special EPA lists.

Hot Spot: An area or vicinity of a site containing exceptionally high levels of contamination.

Hydrogeology: The geology of groundwater, with particular emphasis on the chemistry and movement of water.

Impoundment: A body of water or sludge confined by a dam, dike, floodgate, or other barrier.

Incineration: A group of treatment technologies involving destruction of waste by controlled burning at high temperatures, e.g., burning sludge to reduce the remaining residues to a non-burnable ash that can be disposed of safely on land, in some waters, or in underground locations.

Infiltration: The movement of water or other liquid down through soil from precipitation (rain or snow) or from application of wastewater to the land surface.

Influent: Water, wastewater, or other liquid flowing into a reservoir, basin, or treatment plant.

Injection Well: A well into which waste fluids are placed, under pressure, for purposes of disposal.

Inorganic Chemicals: Chemical substances of mineral origin, not of basic carbon structure.

Installation Restoration Program: The specially funded program established in 1978 under which the Department of Defense has been identifying and evaluating its hazardous waste sites and controlling the migration of hazardous contaminants from those sites.

Intake: The source from where a water supply is drawn, such as from a river or water body.

Interagency Agreement: A written agreement between the EPA and a Federal agency that has the lead for site cleanup activities,

setting forth the roles and responsibilities of the agencies for performing and overseeing the activities. States often are parties to interagency agreements.

Interim (Permit) Status: Conditions under which hazardous waste treatment, storage, and disposal facilities, that were operating when regulations under the RCRA became final in 1980, are temporarily allowed by the EPA to continue to operate while awaiting denial or issuance of a permanent permit. The facility must comply with certain regulations to maintain interim status.

Lagoon: A shallow pond or liquid waste containment structure. Lagoons typically are used for the storage of wastewaters, sludges, liquid wastes, or spent nuclear fuel.

Landfarm: To apply waste to land and/or incorporate waste into the surface soil, such as fertilizer or soil conditioner. This practice commonly is used for disposal of composted wastes and sludges.

Landfill: A disposal facility where waste is placed in or on land. *Sanitary* landfills are disposal sites for non-hazardous solid wastes. The waste is spread in layers, compacted to the smallest practical volume, and covered with soil at the end of each operating day. Secure *chemical* landfills are disposal sites for hazardous waste. They are designed to minimize the chance of release of hazardous substances into the environment [see Resource Conservation and Recovery Act].

Leachate [n]: The liquid that trickles through or drains from waste, carrying soluble components from the waste. **Leach, Leaching [v.t.]:** The process by which soluble chemical components are dissolved and carried through soil by water or some other percolating liquid.

Leachate Collection System: A system that gathers liquid that has leaked into a landfill or other waste disposal area and pumps it to the surface for treatment.

Liner: A relatively impermeable barrier designed to prevent leachate (waste residue) from leaking from a landfill. Liner materials include plastic and dense clay.

Long-term Remedial Phase: Distinct, often incremental, steps that are taken to solve site pollution problems. Depending on the complexity, site cleanup activities can be separated into several of these phases.

Marsh: A type of wetland that does not contain peat moss deposits and is dominated by vegetation. Marshes may be either fresh or saltwater and tidal or non-tidal [see Wetland].

Migration: The movement of oil, gas, contaminants, water, or other liquids through porous and permeable soils or rock.

Mill Tailings: [See Mine Tailings].

Mine Tailings: A fine, sandy residue left from mining operations. Tailings often contain high concentrations of lead, uranium, and arsenic or other heavy metals.

Mitigation: Actions taken to improve site conditions by limiting, reducing, or controlling toxicity and contamination sources.

Modeling: A technique using a mathematical or physical representation of a system or theory that tests the effects that changes on system components have on the overall performance of the system.

Monitoring Wells: Special wells drilled at specific locations within, or surrounding, a hazardous waste site where groundwater can be sampled at selected depths and studied to obtain such information as the direction in

which groundwater flows and the types and amounts of contaminants present.

National Priorities List (NPL): The EPA's list of the most serious uncontrolled or abandoned hazardous waste sites identified for possible long-term cleanup under Superfund. The EPA is required to update the NPL at least once a year.

Neutrals: Organic compounds that have a relatively neutral pH, complex structure and, due to their organic bases, are easily absorbed into the environment. Naphthalene, pyrene, and trichlorobenzene are examples of neutrals.

Nitroaromatics: Common components of explosive materials, which will explode if activated by very high temperatures or pressures; 2,4,6-Trinitrotoluene (TNT) is a nitroaromatic.

Notice Letter: A General Notice Letter notifies the parties potentially responsible for site contamination of their possible liability. A Special Notice Letter begins a 60-day formal period of negotiation during which the EPA is not allowed to start work at a site or initiate enforcement actions against potentially responsible parties, although the EPA may undertake certain investigatory and planning activities. The 60-day period may be extended if the EPA receives a good faith offer within that period.

On-Scene Coordinator (OSC): The predesignated EPA, Coast Guard, or Department of Defense official who coordinates and directs Superfund removal actions or Clean Water Act oil- or hazardous-spill corrective actions.

Operation and Maintenance: Activities conducted at a site after a cleanup action is completed to ensure that the cleanup or containment system is functioning properly.

Organic Chemicals/Compounds: Chemical substances containing mainly carbon, hydrogen, and oxygen.

Outfall: The place where wastewater is discharged into receiving waters.

Overpacking: Process used for isolating large volumes of waste by jacketing or encapsulating waste to prevent further spread or leakage of contaminating materials. Leaking drums may be contained within oversized barrels as an interim measure prior to removal and final disposal.

Pentachlorophenol (PCP): A synthetic, modified petrochemical that is used as a wood preservative because of its toxicity to termites and fungi. It is a common component of creosotes and can cause cancer.

Perched (groundwater): Groundwater separated from another underlying body of groundwater by a confining layer, often clay or rock.

Percolation: The downward flow or filtering of water or other liquids through subsurface rock or soil layers, usually continuing downward to groundwater.

Petrochemicals: Chemical substances produced from petroleum in refinery operations and as fuel oil residues. These include fluoranthene, chrysene, mineral spirits, and refined oils. Petrochemicals are the bases from which volatile organic compounds (VOCs), plastics, and many pesticides are made. These chemical substances often are toxic to humans and the environment.

Phenols: Organic compounds that are used in plastics manufacturing and are by-products of petroleum refining, tanning, textile, dye, and resin manufacturing. Phenols are highly poisonous.

Physical Chemical Separation: The treatment process of adding a chemical to a substance to separate the compounds for further treatment or disposal.

Pilot Testing: A small-scale test of a proposed treatment system in the field to determine its ability to clean up specific contaminants.

Plugging: The process of stopping the flow of water, oil, or gas into or out of the ground through a borehole or well penetrating the ground.

Plume: A body of contaminated groundwater flowing from a specific source. The movement of the groundwater is influenced by such factors as local groundwater flow patterns, the character of the aquifer in which groundwater is contained, and the density of contaminants [see Migration].

Pollution: Generally, the presence of matter or energy whose nature, location, or quantity produces undesired health or environmental effects.

Polycyclic Aromatic Hydrocarbons or Polyaromatic Hydrocarbons (PAHs): PAHs, such as pyrene, are a group of highly reactive organic compounds found in motor oil. They are a common component of creosotes and can cause cancer.

Polychlorinated Biphenyls (PCBs): A group of toxic chemicals used for a variety of purposes including electrical applications, carbonless copy paper, adhesives, hydraulic fluids, microscope immersion oils, and caulking compounds. PCBs also are produced in certain combustion processes. PCBs are extremely persistent in the environment because they are very stable, non-reactive, and highly heat resistant. Chronic exposure to PCBs is believed to cause liver damage. It also is known to bioaccumulate in fatty tissues. PCB use and sale was banned in 1979 with the passage of the Toxic Substances Control Act.

Polynuclear Aromatic Hydrocarbons (PNAs): PNAs, such as naphthalene, and biphenyls, are a group of highly reactive organic compounds that are a common component of creosotes, which can be carcinogenic.

Polyvinyl Chloride (PVC): A plastic made from the gaseous substance vinyl chloride. PVC is used to make pipes, records, raincoats, and floor tiles. Health risks from high concentrations of vinyl chloride include liver cancer and lung cancer, as well as cancer of the lymphatic and nervous systems.

Potable Water: Water that is safe for drinking and cooking.

Potentially Responsible Parties (PRPs): Parties, including owners, who may have contributed to the contamination at a Superfund site and may be liable for costs of response actions. Parties are considered PRPs until they admit liability or a court makes a determination of liability. PRPs may sign a Consent Decree or Administrative Order on Consent to participate in site cleanup activity without admitting liability.

Precipitation: The removal of solids from liquid waste so that the solid and liquid portions can be disposed of safely; the removal of particles from airborne emissions. Electrochemical precipitation is the use of an anode or cathode to remove the hazardous chemicals. Chemical precipitation involves the addition of some substance to cause the solid portion to separate.

Preliminary Assessment: The process of collecting and reviewing available information about a known or suspected waste site or release to determine if a threat or potential threat exists.

Pump and Treat: A groundwater cleanup technique involving the extracting of contaminated groundwater from the subsurface and the removal of contaminants, using one of several treatment technologies.

Radionuclides: Elements, including radium and uranium-235 and -238, which break down and produce radioactive substances due to their unstable atomic structure. Some are man-made, and others are naturally occurring in the environment. Radon, the gaseous form of radium, decays to form alpha particle radiation, which cannot be absorbed through skin. However, it can be inhaled, which allows alpha particles to affect unprotected tissues directly and thus cause cancer. Radiation also occurs naturally through the breakdown of granite stones.

RCRA: [See Resource Conservation and Recovery Act].

Recharge Area: A land area where rainwater saturates the ground and soaks through the earth to reach an aquifer.

Record of Decision (ROD): A public document that explains which cleanup alternative(s) will be used to clean up sites listed on the NPL. It is based on information generated during the remedial investigation and feasibility study and consideration of public comments and community concerns.

Recovery Wells: Wells used to withdraw contaminants or contaminated groundwater.

Recycle: The process of minimizing waste generation by recovering usable products that might otherwise become waste.

Remedial Action (RA): The actual construction or implementation phase of a Superfund site cleanup following the remedial design [see Cleanup].

Remedial Design: A phase of site cleanup, where engineers design the technical specifications for cleanup remedies and technologies.

Remedial Investigation: An in-depth study designed to gather the data necessary to determine the nature and extent of contamination at a Superfund site, establish the criteria for cleaning up the site, identify the preliminary alternatives for cleanup actions, and support the technical and cost analyses of the alternatives. The remedial investigation is usually done with the feasibility study. Together they are customarily referred to as the RI/FS [see Feasibility Study].

Remedial Project Manager (RPM): The EPA or State official responsible for overseeing cleanup actions at a site.

Remedy Selection: The selection of the final cleanup strategy for the site. At the few sites where the EPA has determined that initial response actions have eliminated site contamination, or that any remaining contamination will be naturally dispersed without further cleanup activities, a "No Action" remedy is selected [see Record of Decision].

Removal Action: Short-term immediate actions taken to address releases of hazardous substances [see Cleanup].

Residual: The amount of a pollutant remaining in the environment after a natural or technological process has taken place, e.g., the sludge remaining after initial wastewater treatment, or particulates remaining in air after the air passes through a scrubbing, or other, process.

Resource Conservation and Recovery Act (RCRA): A Federal law that established a regulatory system to track hazardous substances from the time of generation to disposal. The law requires safe and secure

procedures to be used in treating, transporting, storing, and disposing of hazardous substances. RCRA is designed to prevent new, uncontrolled hazardous waste sites.

Retention Pond: A small body of liquid used for disposing of wastes and containing overflow from production facilities. Sometimes retention ponds are used to expand the capacity of such structures as lagoons to store waste.

Riparian Habitat: Areas adjacent to rivers and streams that have a high density, diversity, and productivity of plant and animal species relative to nearby uplands.

Runoff: The discharge of water over land into surface water. It can carry pollutants from the air and land and spread contamination from its source.

Scrubber: An air pollution device that uses a spray of water or reactant or a dry process to trap pollutants in emissions.

Sediment: The layer of soil, sand, and minerals at the bottom of surface waters, such as streams, lakes, and rivers, that absorbs contaminants.

Seeps: Specific points where releases of liquid (usually leachate) form from waste disposal areas, particularly along the lower edges of landfills.

Seepage Pits: A hole, shaft, or cavity in the ground used for storage of liquids, usually in the form of leachate, from waste disposal areas. The liquid gradually leaves the pit by moving through the surrounding soil.

Septage: Residue remaining in a septic tank after the treatment process.

Sinkhole: A hollow depression in the land surface in which drainage collects; associated with underground caves and passages that facilitate the movement of liquids.

Site Characterization: The technical process used to evaluate the nature and extent of environmental contamination, which is necessary for choosing and designing cleanup measures and monitoring their effectiveness.

Site Inspection: The collection of information from a hazardous waste site to determine the extent and severity of hazards posed by the site. It follows, and is more extensive than, a preliminary assessment. The purpose is to gather information necessary to score the site, using the Hazard Ranking System, and to determine if the site presents an immediate threat that requires a prompt removal action.

Slag: The fused refuse or dross separated from a metal in the process of smelting.

Sludge: Semi-solid residues from industrial or water treatment processes that may be contaminated with hazardous materials.

Slurry Wall: Barriers used to contain the flow of contaminated groundwater or subsurface liquids. Slurry walls are constructed by digging a trench around a contaminated area and filling the trench with an impermeable material that prevents water from passing through it. The groundwater or contaminated liquids trapped within the area surrounded by the slurry wall can be extracted and treated.

Smelter: A facility that melts or fuses ore, often with an accompanying chemical change, to separate the metal. Emissions from smelters are known to cause pollution.

Soil Gas: Gaseous elements and compounds that occur in the small spaces between particles of soil. Such gases can move through

or leave the soil or rock, depending on changes in pressure.

Soil Vapor Extraction: A treatment process that uses vacuum wells to remove hazardous gases from soil.

Soil Washing: A water-based process for mechanically scrubbing soils in-place to remove undesirable materials. There are two approaches: dissolving or suspending them in the wash solution for later treatment by conventional methods, and concentrating them into a smaller volume of soil through simple particle size separation techniques [see Solvent Extraction].

Stabilization: The process of changing an active substance into inert, harmless material, or physical activities at a site that act to limit the further spread of contamination without actual reduction of toxicity.

Solidification/Stabilization: A chemical or physical reduction of the mobility of hazardous constituents. Mobility is reduced through the binding of hazardous constituents into a solid mass with low permeability and resistance to leaching.

Solvent: A substance capable of dissolving another substance to form a solution. The primary uses of industrial solvents are as cleaners for degreasing, in paints, and in pharmaceuticals. Many solvents are flammable and toxic to varying degrees.

Solvent Extraction: A means of separating hazardous contaminants from soils, sludges, and sediment, thereby reducing the volume of the hazardous waste that must be treated. It generally is used as one in a series of unit operations. An organic chemical is used to dissolve contaminants as opposed to water-based compounds, which usually are used in soil washing.

Sorption: The action of soaking up or attracting substances. It is used in many pollution control systems.

Stillbottom: Residues left over from the process of recovering spent solvents.

Stripping: A process used to remove volatile contaminants from a substance [see Air Stripping].

Sumps: A pit or tank that catches liquid runoff for drainage or disposal.

Superfund: The program operated under the legislative authority of the CERCLA and Superfund Amendments and Reauthorization Act (SARA) to update and improve environmental laws. The program has the authority to respond directly to releases or threatened releases of hazardous substances that may endanger public health, welfare, or the environment. The "Superfund" is a trust fund that finances cleanup actions at hazardous waste sites.

Surge Tanks: A holding structure used to absorb irregularities in flow of liquids, including liquid waste materials.

Swamp: A type of wetland that is dominated by woody vegetation and does not accumulate peat moss deposits. Swamps may be fresh or saltwater and tidal or non-tidal [see Wetlands].

Thermal Treatment: The use of heat to remove or destroy contaminants from soil.

Treatability Studies: Testing a treatment method on contaminated groundwater, soil, etc., to determine whether and how well the method will work.

Trichloroethylene (TCE): A stable, colorless liquid with a low boiling point. TCE has many industrial applications, including use as

a solvent and as a metal degreasing agent. TCE may be toxic to people when inhaled, ingested, or through skin contact and can damage vital organs, especially the liver [see Volatile Organic Compounds].

Unilateral [Administrative] Order: [see Administrative Order].

Upgradient: An upward hydrologic slope; demarks areas that are higher than contaminated areas and, therefore, are not prone to contamination by the movement of polluted groundwater.

Vacuum Extraction: A technology used to remove volatile organic compounds (VOCs) from soils. Vacuum pumps are connected to a series of wells drilled to just above the water table. The wells are sealed tightly at the soil surface, and the vacuum established in the soil draws VOC-contaminated air from the soil pores into the well, as fresh air is drawn down from the surface of the soil.

Vegetated Soil Cap: A cap constructed with graded soils and seed for vegetative growth, to prevent erosion [see Cap].

Vitrification: The process of electrically melting wastes and soils or sludges to bind the waste in a glassy, solid material more durable than granite or marble and resistant to leaching.

Volatile Organic Compounds (VOCs): VOCs are manufactured as secondary petrochemicals. They include light alcohols, acetone, trichloroethylene, perchloroethylene, dichloroethylene, benzene, vinyl chloride, toluene, and methylene chloride. These potentially toxic chemicals are used as solvents, degreasers, paints, thinners, and fuels. Because of their volatile nature, they readily evaporate into the air, increasing the potential exposure to humans. Due to their low water solubility, environmental persistence, and widespread industrial use, they are commonly found in soil and groundwater.

Waste Treatment Plant: A facility that uses a series of tanks, screens, filters, and other treatment processes to remove pollutants from water.

Wastewater: The spent or used water from individual homes or industries.

Watershed: The land area that drains into a stream or other water body.

Water Table: The upper surface of the groundwater.

Weir: A barrier to divert water or other liquids.

Wetland: An area that is regularly saturated by surface or groundwater and, under normal circumstances, is capable of supporting vegetation typically adapted for life in saturated soil conditions. Wetlands are critical to sustaining many species of fish and wildlife. Wetlands generally include swamps, marshes, and bogs. Wetlands may be either coastal or inland. Coastal wetlands have salt or brackish (a mixture of salt and fresh) water, and most have tides, while inland wetlands are nontidal and freshwater. Coastal wetlands are an integral component of estuaries.

Wildlife Refuge: An area designated for the protection of wild animals, within which hunting and fishing are either prohibited or strictly controlled.

APPENDIX B

Information Repositories for NPL Sites in Massachusetts

*U.S. G.P.O.: 1992-311-893:60634

Information Repositories for NPL Sites in the State of Massachusetts

Repositories are established for all NPL sites so that the public can obtain additional information related to site activities. Some sites may have more than one repository location, however, the primary site repository is listed below. All public access information pertaining to the site will be on file at these repositories. The quantity and nature of the documentation found in the repositories depends on the extent of activity and cleanup progress for each site and may include some or all of the following: community relations plans, announcements for public meetings, minutes from public meetings, fact sheets detailing activities at sites, documents relating to the selection of cleanup remedies, press releases, locations of other public information centers, and any other documents pertaining to site activities.

Site Name	Site Repository
ATLAS TACK CORPORATION	Fairhaven Public Library, Center Street, Fairhaven, MA 02719
BAIRD & MCGUIRE	Holbrook Public Library, 2 Plymouth Street, Holbrook, MA 02343
CANNON ENGINEERING CORPORATION	Bridgewater Public Library, 15 South Street, Bridgewater, MA 02324
CHARLES-GEORGE RECLAMATION TRUST	Littlefield Public Library, 25 Middlesex Road, Tyngsborough, MA 01879
FORT DEVENS-SUDBURY TRAINING ANNEX	Goodnow Library, 21 Concord Street, Sudburg, MA 01776
FORT DEVENS	Ayer Library, 26 East Main Street, Ayer, MA 01432
GROVELAND WELLS	Langley-Adams Library, Main Street, Groveland, MA 01834
HAVERHILL MUNICIPAL LANDFILL	Not Established
HOCOMONCO POND	Westborough Public Library, West Main Street, Westborough, MA 01581
INDUSTRI-PLEX	Reading Public Library, 64 Middlesex Library, Reading, MA 01867
IRON HORSE PARK	Billerica Public Library, 25 Concord Road, Billerica, MA 01821
NEW BEDFORD SITE	New Bedford Free Library, 613 Pleasant Street, Bedford, MA 02740
NORWOOD PCBS	Morrill Memorial Library, Walpole Street, Norwood, MA 02062
NYANZA CHEMICAL WASTE DUMP	Ashland Public Library, 66 Front Street, Ashland, MA 01721
OTIS AIR NAT'L GUARD BASE/CAMP EDWARDS	Jonathon Bourne Library, 19 Sandwich Road, Bourne, MA 02532
PLYMOUTH HARBOR/CANNON ENG. CORP.	Plymouth Public Library, 11 North Street, Plymouth, MA 02360
PSC RESOURCES	Palmer Public Library, 455 North Main Street, Palmer, MA 01069
RE-SOLVE, INC.	Southworth Public Library, 732 Dartmouth Street, Dartmouth, MA 02748
ROSE DISPOSAL PIT	Lanesborough Public Library, Main Street, Lanesborough, MA 01237
SALEM ACRES	Salem Public Library, 370 Essex Street, Salem, MA 01970
SHPACK LANDFILL	Norton Conservation Commission, 70 East Main Street, Norton, MA 02766
SILRESIM CHEMICAL CORPORATION	Pollard Memorial Library, 401 Merrimack Street, Lowell, MA 01850
SULLIVAN'S LEDGE	New Bedford City Hall, City Planning Department, 133 Williams Street, New Bedford, MA 02740
WELLS G & H	Thompson Public Library, 45 Pleasant Street, Woburn, MA 01801
W.R. GRACE AND COMPANY, INC.	Action Public Library, 486 Main Street, Action, MA 01720