

**Remediation of Place:
The Role of the United States Environmental Protection Agency in
Designing Reuse at Superfund Sites**

by

Carol Goldsberry Tucker

M.S. Civil Engineering
University of Massachusetts, Lowell, 1992

S.B. Biomedical Engineering
Brown University, 1987

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Author_

Department of Urban Studies and Planning
May 15, 2002

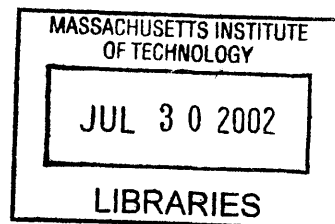
Certified by _____

5/15/02

William Shutkin
Lecturer
Department of Urban Studies and Planning
Thesis Supervisor

Accepted by _____

Professor Dennis Frenchman
Chair, MCP Committee
Department of Urban Studies and Planning



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ABSTRACT

This thesis will explore what the U.S. Environmental Protection Agency's (EPA) direct and indirect roles should and could be in fostering place making for Superfund site redevelopment. The EPA manages the clean up of severely contaminated abandoned property under the Comprehensive Environmental Response Compensation Liability Act (CERCLA), a.k.a. the Superfund Program, in order to protect human health and the environment. These neglected places are often a blight to the surrounding communities, causing disinvestment and decay.

Redevelopment of these abandoned sites is often difficult and plagued with challenging circumstances and uncertainties. Impediments to Superfund site redevelopment include fears associated with health risks and liability, uncertainty on the length of clean up time, lack of willingness of the property owner, and stigma. The revitalization of these sites is vital to improving the quality of life of the surrounding community and the region.

The redevelopment design is a critical component of revitalization and needs to be thoughtfully constructed. Urban design goals should be geared towards enhancing the public realm, improving quality of life, and creating a sense of place. This is place making and should be inclusive and account for the needs of the occupants.

EPA's current policies and tools under the Superfund Redevelopment Initiative do not achieve place making results. Recommendation for change include the development of urban design principles and reuse planning guidance, providing education and training for both EPA staff and affected communities, shifting the expertise of the workforce, providing more funding for planning activities and changing legislative to incorporate regional environmental solutions.

Thesis Supervisor: William Shutkin

Title: Lecturer, Department of Urban Studies and Planning

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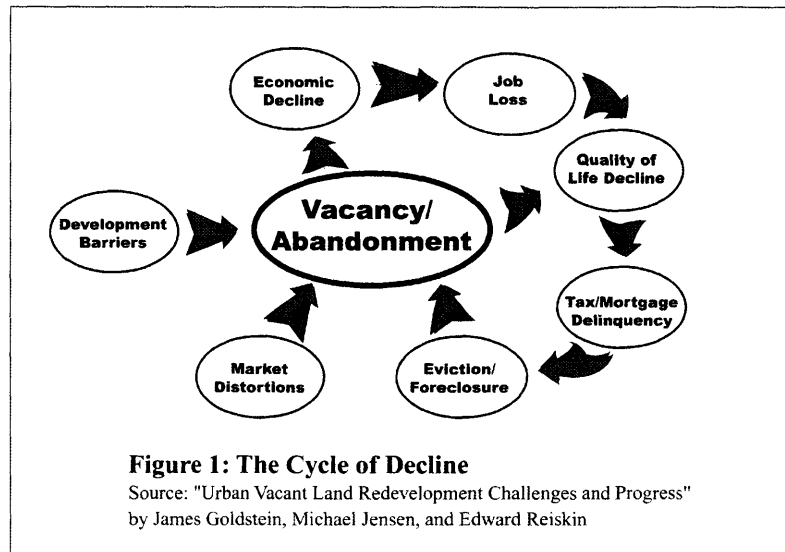
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1 Introduction

It is estimated that there are 450,000 to 600,000¹ vacant or underutilized former industrial or commercial properties scattered in urban, suburban, and rural communities across the country. These properties are considered “brownfields” sites and are stigmatized by the perception of contamination. These neglected places are a blight to the surrounding area, causing

disinvestment and decay. Community members watch the “cycle of decline” (see Figure 1) as these vacant lands reduce surrounding property values, lower the tax base, and attract transients and illegal dumping. This in turn has contributed to sprawl, causing outmigration from the city core moving people and jobs to greenfield locations.



Subsets of these properties are Federal Superfund³ sites which have been placed on the National Priority List (NPL). NPL sites have been environmentally assessed by the U.S. Environmental Protection Agency (EPA) and determined to be dangerously polluted, presenting a real threat to public health, welfare and the environment. The EPA has managed these NPL sites under the Superfund program since the enactment of the Comprehensive Environmental Response Compensation Liability Act (CERCLA) in 1980.

CERCLA mandates that EPA clean up NPL sites to ensure that remedies are protective for the anticipated future uses of the site. In other words, in order to establish appropriate clean up levels and methodologies, EPA must first be able to predict the types of future uses for that land. In 1995, after reevaluating the effectiveness of the Superfund program, EPA issued the Land Use in the CERCLA Remedy Selection Process Directive aimed at highlighting the need for EPA decision makers to work with local communities and identify potential options for site reuse. This effort was followed by the 1999 creation of the Superfund Redevelopment Initiative and several tools to assist communities in redevelopment efforts. EPA’s major focus in these efforts

¹ Estimated figure of the number of Brownfields sites in the U.S. in the National Governors Association publication, *Where do we Grow from here? New Mission for Brownfields: Attacking Sprawl by Revitalizing Older Communities*. 2000.

² Ibid.

³ CERCLA provided for the creation of a tax on the chemical and petroleum industries that went to a trust fund or “Superfund” for cleaning up these abandoned or uncontrolled hazardous waste sites.

to date has been finding ways to reinhabit the sites. Little attention has been given to specifying design principles that truly enhance overall quality of life.

As a community changes over time, so do the requirements of the associated land uses. Identification of appropriate new uses of these sites can meet with opposition from many different constituents. Redevelopment of these abandoned industrial landscape sites is often difficult and plagued with challenging circumstances and uncertainties. Obstacles can include, among other things, obsolete building design, outdated and dilapidated infrastructure, undesirable location, poor access, and limited transportation options.

An NPL site (and Brownfields site) can add additional layers to redevelopment impediments. Uncertainties range from questions like: What types of clean up can be accomplished, and how long will clean up take? What type of risk is associated with that clean up level? How safe will the site be given its environmental history? Is there liability associated with the site? Who has site control (ownership)? Who makes the decisions? What is the role of the government? In general, these sites bring with them a fear of investment due to stigma associated with contaminated properties.

The revitalization of these sites is vital to improving the quality of life of the surrounding community and the region. Redevelopment can produce direct and indirect economic benefits such as job creation, tax generation, and increased area property values. Improved environmental conditions make healthier neighborhoods and deter sprawl development, thus preserving farmlands and open space. In addition, reuse can provide opportunities to reconnect the site with its surroundings, offering enormous social contributions and the opportunity to create a sense of place. The redevelopment design is a critical component of revitalization and needs to be thoughtfully constructed.

Scholars, architects, planners, politicians and other urban design professionals debate over what best formula is for making a good urban design.⁴ I believe that a successful urban design is one that creates a wonderful place for people to live, work, learn, explore, visit, and/or play. Good design balances opportunity with cost, shape with use, and past with future. A program which serves the market place and addresses urban design as art is necessary but insufficient. Community involvement and the relationship between social and physical planning need to be incorporated to create a functional environment.

In order to achieve success, urban design professionals need to develop a process to address an array of concerns including social, political, and financial issues. This process must incorporate a balance of problem solving, community design, and artistic design techniques and also be financially pragmatic. Urban design goals should be geared to enhancing the public realm, improving quality of life, and creating a sense of place. Social and physical environments coexist as an integral system; and urban design, which is both a public and political act, needs to deal with the built form and public welfare. "A place worth living and leaving for future generations requires investment of time and money as well as an understanding of the

⁴ Here the term "urban design" is used to capture more than just urban areas, but to include any community. The terms "civic design," "environmental planning and design," or the British term "town and county planning" may also have been used. *City Sense and City Design: Writings and Projects of Kevin Lynch*, p. 653. 1980.

fundamental relationship between the physical environment and society's overall quality of life. Getting there requires a shared sense of commitment to a particular place and to the life of a particular community arrived at by rigorous dialogue and the practice of genuine citizenship."⁵ Design should be appropriate and contextual, allowing the physical characteristics to convey the expressions and meanings of the place. This is place making and should be inclusive and account for the needs of the occupants. **How can EPA not only encourage stakeholder involvement to identify appropriate site reuse but also foster place making in the redevelopment of an NPL site?** This thesis will explore what EPA's direct and indirect roles should and could be in fostering place making for Superfund sites.

Environmental laws have been designed to address single issues such as air quality, protection of drinking water sources, or waste disposal practices. In addition, these laws and subsequent regulations and policies have had very little connection to land use policy. Environmental issues are managed at the state and federal levels through mostly prohibitive polices, whereas land use issues are managed at the local government level through zoning and building code requirements.

"Increasingly the nation finds itself struggling to meet the public's competing demands for open space, wildlife, recreation, environmental quality, economic development, jobs, transportation, and housing. Although it may never be possible in a democracy to meet each of these demands equitably, the tortured and fragmented way in which land use decisions are currently made all but ensures that conflict and crisis will continue to characterize environmental policy in the twenty first century. It need not be so. A new land ethic must be developed, one that considers the need of current and future generations, understands that carrying capacity of natural systems, and builds communities in which people can continue to prosper socially and economically.

*...The next generation of environmental policy makers will require a more holistic approach--one that considers the impact of development on natural systems and integrates decision making across political boundaries. It must build on the fundamental recognition that land use decisions and environmental progress are two sides of the same coin. So long as the cumulative effects of land use decisions are ignored, environmental policy will be only marginally successful in achieving its goals."*⁶

Successful land use planning depends on good information, the political will of government, and the support of private sector and citizenry.⁷ Urban vacant land redevelopment needs both broad policy approaches, such as regional governance of land-use planning and financial incentives, and targeted place-based programs to tackle barriers. Owners, developers, community groups, and local governments often avoid or abrogate the responsibility to reinvest necessary resources

⁵ *The Land That Could Be*, p. xv. 2001.

⁶ Chapter Four: "Land Use The Forgotten Agenda", *Thinking Ecologically: the Next Generations of Environmental Policy*. p. 61. 1997.

⁷ *Ibid.* p. 66.

when land is considered a liability. One entity needs to take leadership and action to readdress the issue.⁸

EPA is a key stakeholder in the decision process for Superfund site reuse. EPA is also in an influential position of power, but current environmental laws do not provide enough incentive for EPA to invest the appropriate time and resources to achieve good urban design for Superfund site reuse. The Agency needs to recognize its important role in land use decision making and how that ultimately impacts community revitalization, sustainable development, and environmental protection.

Chapter 2 outlines EPA's authority under CERCLA, the clean up process, enforcement tools, and Superfund site redevelopment obstacles. The Small Business Liability Relief and Brownfields Revitalization Act signed on January 11, 2002 is an important step in addressing land use in environmental law. The implication of this law to NPL sites will be highlighted.

Chapter 3 will present EPA's current policies, tools, and evolving role in fostering reuse under the EPA Superfund Redevelopment Initiative. Chapter 3 will also discuss the Department of Defense (DoD) approach to Superfund site redevelopment as a part of the Defense Base Realignment and Closure Act (DBRAC) of 1990. DoD owns several sites which have been listed on the NPL. DoD works closely with EPA on these sites to conduct clean up activities in accordance with CERCLA. DBRAC requires that DOD provide a mechanism for the base to be reintegrated into the community. DBRAC can serve as a legal precedent for EPA to observe for future CERCLA legislative changes.

The proposition of what makes a good urban design will be elaborated upon in Chapter 4 based on the ideas, concepts, and experiences of a variety of urban design professional including other branches of EPA. These concepts represent only a glimpse of the urban design philosophies discussed in the field today. Rather than being prescriptive, they are intended to provoke thought on design elements that achieve favorable results. The goal of urban design should be the enhancement of total social well being.⁹

Chapter 5 will present case studies of Superfund redevelopment projects and evaluate them against design principles presented in Chapter 4 to see which aspects of place making have emerged. In each case, EPA is playing a role in integrating the goal of protection with the future land use plans. This chapter will discuss how EPA has adjusted or plans to adjust remediation design in order to integrate the specific site redevelopment plans. Community benefits, design attributes, and design compromises will be highlighted.

The first case, the Industri-Plex site, is regarded as a national model for EPA with a precedent-setting and innovative approach to addressing reuse through an EPA enforcement mechanism. This site is nearing completion of its redevelopment construction and has won numerous awards, including the Phoenix Award for Outstanding Land Recycling Achievements and an EPA Regional Finalist and National Silver Medal. The next case study, Silresim Chemical Company

⁸ From Section IV. Lessons Learned in the "Urban Vacant Land Redevelopment Challenges and Progress." 2001.

⁹ From Chapter Four: Land Use The Forgotten Agenda, *Thinking Ecologically: the Next Generations of Environmental Policy*, pp. 65- 66. 1997.

site, is in the conceptual stages of a reuse design and has received high marks from the community. In this case, EPA funded \$100,000 to the municipality for reuse planning activities under the Superfund Redevelopment Initiative Program. The last case, Fort Devens, is a Superfund site under BRAC. This site is also nationally recognized for its redevelopment efforts. This project has incorporated many of the design principles in Chapter 4 and could serve as a model for EPA. Each NPL site presents unique environmental circumstances, and the remedy decisions are site specific. Different communities will require different design solutions. The case study analysis will present a limited view of potential ways that EPA has worked or could work at being a better steward for enhancing quality of life.

Finally, Chapter 6 discusses lessons learned and makes several recommendations for statutory and policy changes so that EPA can become a more effective partner in achieving good urban design and environmental protection. The purpose of evaluating these case studies is to discuss EPA's role and how it helped achieve the final design elements that add community benefits and life quality enhancements, as well as to highlight innovative approaches taken in coordinating remediation and redevelopment goals. This Thesis is a starting point for discussion and further analysis of the merits and techniques for EPA and other governmental entities to emphasize the integration of good urban design principles into reuse planning.

I am a participant observer for this thesis. I have been an EPA employee for the past 15 years and have continued to work for EPA New England while studying at MIT. One of the major reasons I decided to attend graduate school in urban planning was that I was continually seeing sites that EPA had cleaned up turn up years later as significant redevelopment problems for communities. I was interested in understanding how a community can go about educating itself on the real risks of site redevelopment while overcoming stigma and coming together to plan for appropriate site reuse. I am currently working in EPA New England Office on the Superfund Redevelopment Team. A major goal of the team is to raise staff awareness of redevelopment merits and assist communities in exploring ways of surmounting obstacles to put Superfund sites back into productive reuse. This thesis presents my views and not necessarily those of the EPA or the EPA SRI Team.

2 The Superfund Program

The discovery of environmental disasters like Love Canal and Times Beach, which surfaced in the 1970's, focused public attention on the lack of adequate Federal regulation to guard against future releases of hazardous substances or to address clean up of sites already contaminated.¹⁰

The Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) a.k.a. the Superfund Program, was enacted by Congress in 1980 and amended by the Superfund Amendments and Reauthorization Act (SARA) in 1986. It was created by Congress as a result of citizens' concerns over the existence of uncontrolled abandoned waste sites throughout the United States and the potential harmful public health implications of these sites.

Contamination on Superfund sites presents a real threat to public health, welfare, and the environment. CERCLA authorizes EPA to manage the Superfund Program and mandates that EPA identifies and cleans up sites to ensure that remedies are protective for anticipated future uses.

Because Superfund was created as a way to address environmental contamination and not site redevelopment, EPA's mission and corporate culture had not been oriented to understanding the necessary elements for achieving productive reuse. The technical, enforcement and political aspects of superfund all create impediments to superfund site revitalization. As EPA evolves and continues to realize the value of incorporating Superfund redevelopment into its mission, institutional and legal tools have been crafted to help resolve some of these impediments. This Chapter will present an overview of the technical and legal aspects of the Superfund process, current political concerns, and key impediments to redevelopment.

THE TECHNICAL SIDE OF SUPERFUND

CERCLA enabled the revisions to the National Contingency Plan (NCP). The NCP provides the guidelines and procedures needed to respond to releases and threatened releases of hazardous substances, pollutants, or contaminants. Under the NCP, EPA is authorized to locate, investigate, and clean up the most severely contaminated hazardous waste sites nationwide. Sites are discovered by various parties, including citizens, state and local agencies, and EPA Regional offices. The Superfund clean up process begins with site discovery or notification to EPA of a release or substantial threat of release of hazardous substances into the environment, or a release or substantial threat of release of any pollutant or contaminant which may present an imminent and substantial danger to public health or welfare. Once identified, a site will undergo a long and complicated process of site assessment and clean up under the Superfund Remedial Program.¹¹ This is coupled with a mandated public involvement process.

The first step is the Preliminary Assessment/Site Investigation (PA/SI). This is an initial investigation of the historic site activities, environmental activities, and enforcement actions. The PA/SI also includes a site reconnaissance and limited environmental sampling to determine site conditions. Information gathered during the PA/SI is compiled to determine a Hazardous

¹⁰ Chapter 5 *Passing Superfund The Environmental Protection Agency Asking the Wrong Questions*. 1990.

¹¹ Sites which pose an imminent and substantial endangerment to public health, welfare and the environment are addressed by EPA through a separate short-term clean up process under the Removal Program.

Ranking Score (HRS). Scoring is a screening mechanism used to place sites on the National Priorities List (NPL) based on potential risk. The NPL contains the most serious sites identified for possible long-term clean up. Next a site will undergo a Remedial Investigation/Feasibility Study (RI/FS) to determine the nature and extent of contamination.

The Record of Decision (ROD) is EPA's decision document that selects the site remedy. This can be a very complex document open to significant public involvement and scrutiny. The ROD is designed to identify the most protective and cost-effective clean up methodologies for the site given the kind of contamination and the anticipated future land uses. **Ideally the anticipated future use of the site has been identified prior to completion of the ROD.** The ROD also projects the future anticipated cost for these site activities. This is one of the most significant decisions that EPA makes in the process. Once a ROD is agreed upon by all involved parties it is difficult to change.¹²

Many remedies involve leaving waste on the site with some type of barrier to prevent contact. This barrier requires control measures to prevent future uses that will damage its integrity and risk human exposure to the contamination. These control measures, known as "institutional controls," are legal restrictions on property use to limit the nature of activities that may take place.

Next a site will go through a Remedial Design (RD), which is the plan preparation and specification for the chosen remedy. Once the RD is complete, the implementation of the site remedy will begin under a Remedial Action (RA). Construction Completion marks the completion of the RA, and the site is then typically handed over to the state for oversight in the Operation and Maintenance (O&M) phase. Final NPL Site Deletion is the removal of sites from the NPL once the environmental hazards have been addressed.¹³

THE ENFORCEMENT SIDE OF SUPERFUND¹⁴

Under CERCLA authority, EPA has the right to seek out all potentially responsible parties (PRP) for the site. PRPs are individuals, organizations, companies, or corporations that generated or transported the hazardous substances disposed of at a site, current and former site owners and operators. They may all be liable for part or all of the investigation and clean up costs. This liability begins with site discovery and can continue through O&M and even long after the clean up is complete. This liability is joint and severable between all identified parties.

EPA begins to identify PRPs early in the clean up process by conducting PRP searches, which includes reviewing state and federal agency records, conducting title searches, interviewing site operators, and performing PRP financial assessments. Upon identification, EPA notifies the PRPs of their potential liability through General Notice Letters or a Special Notice Letter. A Special Notice Letter is used in order to set a 90- to 120-day moratorium on EPA clean up work and begin a formal period of negotiation between EPA and the PRPs. EPA sends out information requests to ascertain PRP involvement with a site. If the PRP is unresponsive, EPA

¹² The "involved parties" include PRP(s) EPA, and other state and federal environmental and health agencies.

¹³ www.epa.gov/superfund/action/process/sfproces.htm April, 2002

¹⁴ www.epa.gov/oeca/osre/sfdoc.html April 2002.

will use enforcement authority to obtain the information. EPA's PRP search and negotiations processes include release of information to PRPs, allowing them to assess the nature of their waste contribution, identify other PRPs, and help the PRPs work together and develop good-faith offers. Notice letters, sharing information, and negotiations promote interaction and facilitate communication between EPA and PRPs.

EPA determines the financial viability of the PRPs to fund the clean up under a PRP-led action. If a PRP has sufficient financial assets yet is unwilling to settle, EPA may issue a unilateral administrative order (UAO) requiring it to conduct the clean up. Failure to comply with a UAO may result in the imposition of fines, damages, and court orders to conduct the clean ups. Failure of the PRP to conduct the clean up results in a Fund-financed¹⁵ clean up followed by cost recovery actions.

A Consent Decree (CD) is a legal document between EPA and one or more PRP which describes how the PRP(s) will conduct and/or pay for the clean up and pay for past costs. A CD can also describe the condition under which the PRP must cease or correct actions or processes that are polluting the environment or otherwise comply with regulations.

Cost recovery involves documenting and recovering all direct and indirect costs relating to a site clean up action. Demand letters form the basis for cost recovery negotiations. EPA can recover its costs pursuant to an administrative order if they total is less than \$500,000. Administrative actions give PRPs a right to a hearing without involving the courts. However, when more than \$500,000 is sought, EPA must go to court to recover its expenses. These lawsuits usually result in a settlement (consent decree) but may go to a full trial.¹⁶

CERCLA also requires a series of public involvement activities throughout the clean up process. Congress intended for EPA to provide every opportunity for residents of affected communities to become active participants in the process and to have a say in the decisions that affect their community. EPA has developed an extensive community involvement program dedicating a significant number of staff and developing the Superfund Community Involvement Handbook. The mission of the Superfund Community Involvement Program is to advocate and strengthen early and meaningful community participation during Superfund clean ups. The program's aim is to engage in dialogue and collaborate with communities affected by Superfund sites. The purpose of EPA's community involvement is to give people the opportunity to become involved in the activities and to help shape the decisions that are made. EPA recognizes that if a remedy is decided on factoring in community concerns and interests, then it is less likely to be controversial and more likely to be accepted. The EPA uses community involvement as the vehicle for getting community concerns and interests to the decision-making table. The Community Involvement Handbook states, "EPA has learned that making the extra effort to listen to and involve people leads to a smoother and more timely clean up. Most communities can accept a remedy, even if they are not completely satisfied with it, provided they understand how the decision was reached and had a meaningful part in reaching the decision."¹⁷

¹⁵ Fund financed clean ups are paid for out of the federal "Superfund."

¹⁶ U.S. EPA web site www.epa.gov/oerrpage/superfund/resources/landuse.pdf, April, 2002

¹⁷ US EPA, *Superfund Community Involvement Handbook*. 2001.

A community has the option to form a Community Advisory Group (CAG) made up of representatives of diverse community interests. A CAG provides a public forum for community members to present and discuss their needs and concerns related to the Superfund decision-making process. A CAG allows EPA to hear and seriously consider community preferences for site clean up and remediation. A CAG is a formal group created in addition to the required community involvement program activities.¹⁸

THE POLITICAL SIDE OF SUPERFUND

CERCLA is a very powerful statute and many contentious issues have been raised about how to manage and even change this law over the past 21 years. EPA has been scrutinized and rightfully questioned about many issues of implementation, interpretation, and working with stakeholders under CERCLA. In 1993, EPA announced the first of three rounds of "Superfund Reforms" as result of two studies¹⁹ that evaluated ways to improve EPA's performance under CERCLA. Each round of reforms consisted of various initiatives and pilots that focused on changes which could be implemented within the existing statutory framework. The reforms were intended to promote timely and cost-effective clean up choices, promote reducing litigation and transaction costs, ensure that states and communities are informed and involved in clean up decisions, promote economic redevelopment, address environmental justice concerns, and provide consistent program implementation.²⁰ These reforms have hugely impacted EPA's ability to promote Superfund site redevelopment. (See Figure 2: Superfund Timeline.)

The results of these reforms have trickled down to how EPA politically works with its State and Tribal counterparts to decide whether a site shall become listed on the NPL. States share a significant role in the Superfund program. State governors are required to concur on the final listing of an NPL site in their state. The EPA regional offices are required to query States or Tribes regarding their support for NPL listing as early as practical, ideally prior to initiating a Hazard Ranking System (HRS) package. If these decisions break down, then policy calls for formal correspondence and high-level negotiations between the region and State and provides a process for the EPA headquarters to decide any cases that cannot be resolved directly between the region and State/Tribe.²¹

¹⁸ From the US EPA, *Superfund Community Involvement Handbook*. 2001.

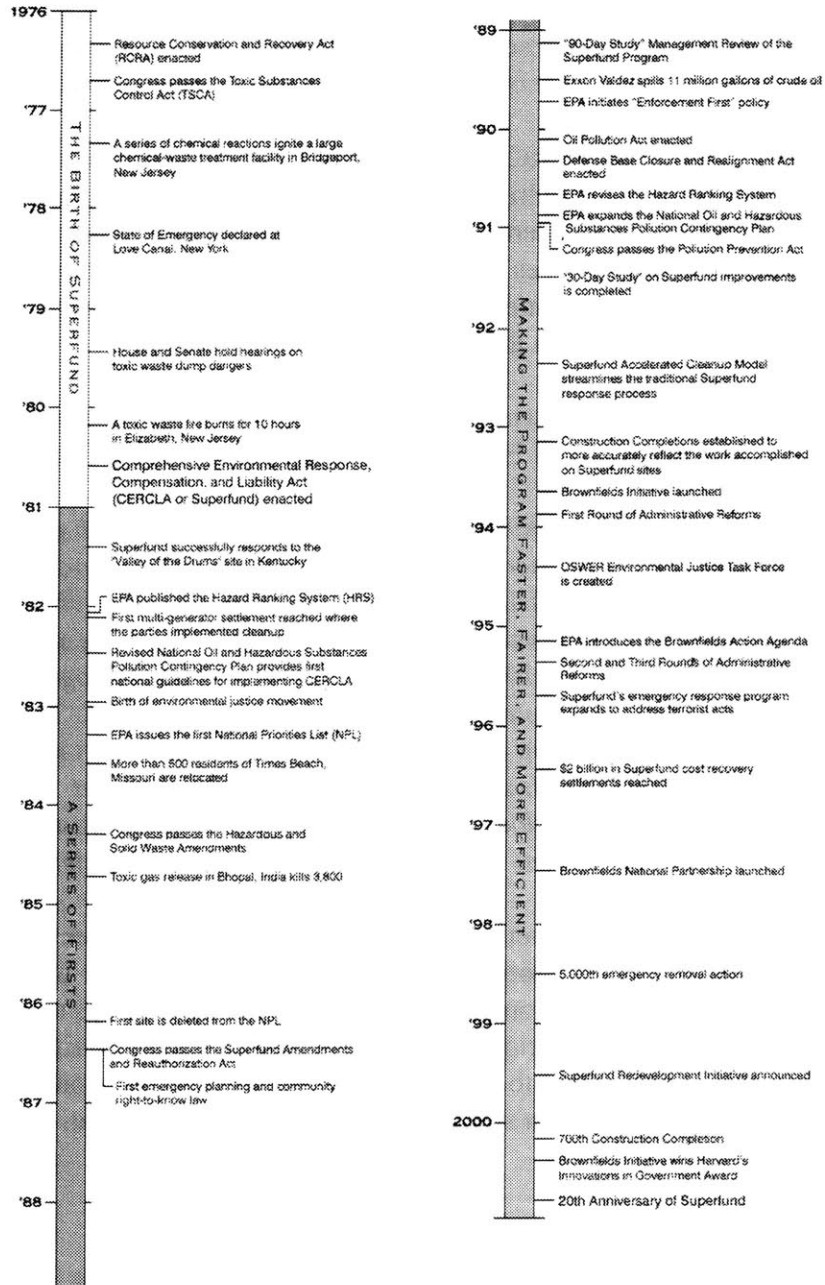
¹⁹ The first study in 1989, "A Management Review of the Superfund Program" (the 90-Day Study), focused on concerns such as enforcement, expediting clean up response, and encouraging community participation. It provided a long-term strategy that includes the "enforcement first" and "worst sites first" mandates. The second study in 1991, "Superfund 30-Day Study Task Force Implementation Plan: Accelerating Clean ups and Evaluating Risk at Superfund Sites" (the 30-Day Study, announced several initiatives and recommendations for change including setting aggressive clean up targets; streamlining the Superfund process; elevating site specific issues that cause delay; accelerating private party clean ups; refocusing the debate on Superfund progress; and reviewing risk assessment/risk management policies. This can be found at www.epa.gov/superfund/programs/reforms. April 2002.

²⁰ www.epa.gov/superfund/programs/reforms. April. 2002

²¹ U.S. EPA, "Progress Toward Implementing Superfund, Fiscal Year 1998 Report to Congress."

Figure 2: Superfund Timeline

Source: U.S. EPA web page www.epa.gov/superfund/action/20years/timeline.htm



A State's agreeing to list a site carries both advantages and disadvantages. When a State agrees to the NPL listing, it also agrees to pay for a percent of the clean up costs and to take over the O&M of the site following Construction Completion. EPA involvement on a site can provide clout and expertise to deal with challenging and enforcement issues and complex community relations. EPA involvement means the commitment of federal dollars and other resources, including technical expertise and support. Listing a site on the NPL can serve to elevate the site above conflicts from local and state pressures. Disadvantages include the stigmatization that comes with the NPL status and the subsequent implication on the local community and economy. This may help to accelerate the "Cycle of Decline" and further deter redevelopment.

EPA has the discretion not to use CERCLA to respond to certain types of releases. Where other authorities exist such as RCRA²², placing sites on the NPL for possible remedial action under CERCLA may not be appropriate. Therefore, EPA has chosen not to place certain types of sites on the NPL even though CERCLA does not exclude such action. If, however, the Agency later determines that sites not listed as a matter of policy are not being properly responded to, the Agency may consider placing them on the NPL.²³

These reforms have also heightened awareness of environmental justice concerns around Superfund sites. In 1996, the National Environmental Justice Advisory Council reported that

*"At the core of an environmental justice perspective is recognition of the interconnectedness of the physical environment to the overall economic, social, human, and cultural/spiritual health of a community. The vision of environmental justice is the development of a paradigm to achieve socially equitable, environmentally healthy, economically secure, psychologically vital, spiritually whole, and ecologically sustainable communities. To this end, Brownfields redevelopment must be linked to helping address this broader set of community needs and goals. It should be noted that revitalization, as we define it, does not lead to displacement of populations through gentrification that often results from redevelopment policies."*²⁴

In 2002 EPA initiated mandatory awareness training for all of its employees on EJ concerns. Currently, the Superfund program factors the potential impacts a site may have on the surrounding community into all decision-making. Sites effecting EJ areas are assessed by the program office together with the community involvement office to ascertain any special community needs, issues, or concerns to factor into extent of contamination studies, risk assessments, and feasibility studies. In some cases this may led to alternative ways of communicating with the community.

²² RCRA is the Resource Conservation and Recovery Act which mandates how operating facilities handle waste material.

²³ Support Document for the "Revised National Priorities List Final Rule" May 2000 State, Tribal, and Site Identification Center

²⁴ This was developed after a 1995 series of public hearings co-sponsored by the National Environmental Justice Advisory Council (NEJAC) Waste and Facility Siting Subcommittee and EPA entitled, "Public Dialogues on Urban Revitalization and Brownfields: Envisioning Healthy and Sustainable Communities" and published in the NEJAC report, "Environmental Justice, Urban Revitalization, and Brownfields: The Search for Authentic Signs of Hope."

When CERCLA was amended in 1986, it provided liability relief for some financial institutions that did not participate in site management under the Lender Liability Rule and also provided protection for government entities that acquire property involuntarily. The Superfund Reforms prompted EPA to issue several other policies and guidance on the clarification of PRP liability. One such policy allows EPA to enter into a Prospective Purchasers Agreement (PPA) with a potential buyer. In a PPA, the potential buyer agrees to provide a benefit to EPA in return for a promise or covenant from the Federal government not to sue for the clean up costs of contamination that existed at the time of the purchase. Benefits to EPA include clean up, funds for clean up, and/or benefits to the community such as a promise of job creation, greenspace preservation, or infrastructure development. The prospective purchaser must promise to exercise due care not to aggravate or contribute to existing contamination or interfere with the EPA response. Also, operations of the new or existing business shall not pose health risks to the community. A Comfort Letter is an additional policy intended to provide clarification of EPA's involvement on a site and identifies whether a party is protected under statutory provision or discretionary enforcement policy.²⁵

Many PRP liability relief policies have recently been codified in The Small Business Liability Relief and Brownfields Revitalization Act signed on January 11, 2002. This legislation provides for additional clarification and liability relief for certain classifications of PRPs. Exemptions of liability are available for land owners of property contaminated solely by a release from contiguous or similarly situated property owned by someone else and bona fide prospective purchasers (and their tenants) so long as the people do not impede the performance of a response action or natural resource restoration. Additionally, the statute exempts certain small-volume contributors and certain contributors of municipal solid waste from Superfund liability.²⁶ This statute also clarifies what actions a landowner must take for due diligence requirements as an innocent landowner. The statute directs EPA to promulgate, within 2 years, regulations establishing standards and practices for satisfying the "all appropriate inquiries requirements."²⁷ See Appendix A for a comprehensive list of provisions in statutes, policies, and guidance on liability relief.

In general, work on NPL sites is prioritized based on risk; yet in many instances, priorities may shift due to factors discussed above and other outside pressures from public, private and political stakeholders. For the first time in its 21-year existence, the Superfund program is facing significant funding issues. The proposed budget for FY 2003 is \$1.3 billion in appropriations for Superfund clean up. Although this is an increase from FY 2002 appropriations, which are currently \$1.3 billion for both brownfields and Superfund clean up activities, site work is continually becoming more expensive, and per-site costs are rising significantly. The EPA Regional Offices have been asked to prioritize site funding requirements in order to allocate funds to those sites with the highest risk. Funding is also an issue for many states. The FY 2003 budget does not propose new taxes, and EPA is looking into possible program reforms to reduce

²⁵ U.S. EPA, *Handbook of Tools for Managing Federal Superfund Liability Risks at Brownfields and Other Sites*. 1998.

²⁶ Each exempt category must meet certain criteria in order to be eligible under the Small Business Liability Relief and Brownfields Revitalization Act.

²⁷ www.epa.gov/swerosps/bf/html-doc/2869sum.htm April 2002.

expenses such as alternatives to NPL listings, strategies to improve State and Tribal relations, and ways to limit litigation.²⁸

IMPEDIMENTS TO SUPERFUND SITE REDEVELOPMENT

In addition to the general impediments to redevelopment of the vacant industrial landscape listed in Chapter 1, other impediments to redevelopment exist related to a superfund site. These reuse limitations include negative association due to stigma, fear of liability, lack of site control, and uncertainties regarding length of clean up and restrictive uses on the property.

Much of the reviewed literature refers to the “Superfund Stigma” as being a deterrent to reuse. Stigma or individual barriers²⁹ is perception that can result in a large loss of value immediately after a site is identified and when the most uncertainty exists around the problem and its solution. Losses are related to the severity or potential danger (real or perceived) of contaminated properties as well as other factors that include the distance from the site.³⁰ Stigma, as it applies to environmental problems, is generally defined as “an adverse public perception about a property that is intangible and not directly quantifiable.”³¹

In the past, most developers and other real estate speculators feared the potential uncertainty of marketing property if there were widespread knowledge about the previous contamination. They had to wrestle with the question of whether to discount potential returns from property investments to account for the stigma effects. Today the real estate industry is beginning to acquire expertise and experience in evaluating risks and costs of these blighted properties and to determine applicable market prices such that a project can be economically viable. As these stakeholders become more educated and precedents begin to show favorable returns, such as Industri-Plex, more investment may occur. Commercial and industrial redevelopment of a site can often become a catalyst to spur other nearby development. Also, if designed appropriately, site redevelopment can provide land uses necessary to complement potential uses on nearby properties. Effective site management can further mitigate stigma. Bringing together stakeholders such as government, NGOs, private industry, and citizens can help to build trust and improve communications.³²

Three types of liabilities are associated with investment in reuse of a contaminated property. The first is that under CERCLA, a PRP is potentially liable for all of the costs associated with site clean up. This includes the current and future owners regardless of whether they caused contamination (unless proven to be innocent land owners). The second is toxic tort liability where there is a risk of future law suits due to allegations of exposures from site contamination. The third is clean up liability due to underestimating the amount, cost or length of time for clean up.

²⁸ Talking Points from Administrator Whitman, March 2002.

²⁹ “Urban Vacant Land Redevelopment Challenges and Progress.” 2001

³⁰ “When Bad Things Happen to Good Properties, Taking Stigma Out of Stigmatized” *Tierra Grande, Journal of the Real Estate Center at Texas A&M University*. Volume 6, No.2, April 1999.

³¹ *Ibid.*

³² “Property Values, Stigma, and Superfund,” www.epa.gov/superfund/programs/recycle/stigma.htm. April 2002.

This liability scheme has presented risk that, in the past, land speculators were unwilling to take. Although developers and public agencies see the benefits in redevelopment, the site owner and financial institutions may perceive their best interests quite differently. The capacity to implement redevelopment is necessary but may not be enough to guarantee a project's outcome.³³ Even with Lender Liability protection, financial institutions are still wary of lending money for projects as the potential for large cost-recovery claims against a developer could lead to bankruptcy. Until now, larger financial institutions have been more tentative than smaller institutions.

PPAs have given some financial institutions comfort in lending money to interested developers,³⁴ yet they do not insulate owners against toxic tort liability. As discussed earlier, the Small Business Liability Relief and Brownfields Revitalization Act, together with several other EPA policies, have codified issues of liability. (See Appendix A.) Additionally, several insurance companies have begun to offer insurance policies to help deal with many of these troubling issues. Investment opportunities which have potential liability issues are still approached cautiously. Only time will tell what impact this new legislation will have. It is predicted that this Bill will nullify the need for EPA to issue future PPAs.

Site ownership and control can be a significant impediment to reuse. Owners can be reluctant to sell or redevelop their properties for many reasons. Large corporations fear liability claims and therefore choose to "mothball" their sites to help manage existing liability risks. In many cases fragmented or multiple ownership can make a deal too complex and will act as a redevelopment barrier. In some cases owners are holding on to property in speculation of an increase in property value and/or the fear that selling the property would result in a net loss. This former reluctance is closely linked to the cause of the vacancy in the first place.³⁵ An owner may also feel reluctant to sell because the current cost of maintaining the site is low. Owners may fear that institutional controls such as restrictive covenants may deteriorate through successive transfers of the site. They also fear the potential for toxic tort claims or claims for additional response and remediation costs related to site activities by the subsequent owner. They may also fear that PPAs may cost too much (including time and resources necessary to negotiate them) or that they may not reduce liability risks sufficiently to justify a site's purchase.³⁶ Additionally, municipal owners may be unwilling to pay for legal proceedings necessary to make the property available and attractive to developers.³⁷

The primary mission of the superfund program is to protect public health now and into the future. In most cases, Superfund sites are faced with extensive soil and/or groundwater environmental contamination that has the potential to spread. Clean up options are based on the risk. For example, it may be technically feasible to clean contaminated groundwater to drinking water quality, yet this may take several decades and cost millions of dollars. If the groundwater is not being consumed for drinking and there is no evidence that the contamination will cause significant ecological damage, i.e. seep to a nearby river, then a less stringent clean up may be

³³ *The Effects of Environmental Hazards and Regulation on Urban Redevelopment*. August 1997.

³⁴ www.epa.gov/superfund/programs/recycle/suc_fact.htm. April 2002.

³⁵ "Urban Vacant Land Redevelopment Challenges and Progress." 2001.

³⁶ "Re-use and Remedy." April 2002.

³⁷ "Urban Vacant Land Redevelopment Challenges and Progress." 2001.

chosen which is fast and less costly. Clean up decisions consider the type of analytes present, their concentration and location, and the current clean up technologies, cost, and available funding. The clean up process is complex, lengthy, and filled with uncertainties.

Some potential concerns for stakeholders interested in site redevelopment are uncertainty about the length of time for clean up, potential remaining health risks after clean up, the need to do additional remediation work, post-project site monitoring, and potential reopening of previously approved clean ups.³⁸ These are issues that EPA has been working on over the past 20 years and has made significant progress. New technology is being studied such as phytoremediation, in-situ thermal treatment, or soil and vapor extraction. The goals of this technology are to make clean ups more effective, efficient, faster, safer, and cheaper. This decision is scientifically complex and can be very site specific.

One alternative for owners is to enter into a lease agreement with the option to purchase instead of selling. This has benefits for both the owner and developer and increases the chances for site redevelopment. In this arrangement, the owner maintains some control over site access and deed restrictions, which can limit the potential for toxic tort suits. This also allows the owner to have control over relations with Federal and State regulatory agencies, remediation needs, and timing. On the other hand, the developer reduces the uncertainties associated with clean up.³⁹

³⁸ *The Effects of Environmental Hazards and Regulation on Urban Redevelopment*, August 1997.

³⁹ *Ibid.*

3 The Superfund Redevelopment Program

CERCLA and the NCP were designed with reuse in mind. The preamble to the NCP discusses how land use assumptions regarding baseline risk provide basis and support the development of the ROD. Current land use determines current risk, predicting future land use is important in estimating future risk. The ROD aids in determining the degree of remediation necessary and to ensure long-term protectiveness of the remedy.⁴⁰ In the early years of Superfund, EPA would primarily determine the anticipated future land use to be the existing zoning for the site. For most sites, the existing zoning was residential (due in part to the lack of a municipal comprehensive plan). EPA was criticized for anticipating future residential land uses for many NPL sites. Residential use is typically the least restricted and has the greatest potential for exposures due to the high level of human activities. This decision required stricter clean up standards, resulting in a slowdown of the clean up process and a significant raise in the clean up costs.¹

In 1995, as part the “Superfund Reforms,” EPA decided to make a conscious effort to focus on Superfund redevelopment in order to create a process to help determine future land use goals. This effort was to encourage EPA staff to work closely with states and communities in order to make more informed clean up decisions, promote economic redevelopment, address environmental justice concerns, and provide consistent program implementation.⁴¹ This resulted in the creation of the EPA Superfund Redevelopment Initiative.

This Chapter will discuss EPA’s progress to date towards developing an effective reuse program. Additionally, the Department of Defense (DoD) is mandated through the Defense Base Closure and Realignment Act of 1990 to develop a program and devote significant time and resources to assisting communities in site realignment. Several former military bases have undergone a comprehensive community-driven reuse-planning effort and are well into implementation. This chapter will present a brief

A note on comparing DoD Federal Facility NPL Sites with Non-Federal Facility NPL Sites

- The types of contamination found at DoD sites are similar to those found at civilian sites and therefore remediation of these sites is similar.
- Site ownership on a DoD site is clear and the U.S. Government is not only willing but also eager to turn over site ownership for redevelopment.
- DoD sites are typically larger making comprehensive area planning easier. Remediation and reuse activities have a greater chance of being funded, yet it is usually cheaper to have a PRP-lead clean up than a federal lead clean up.
- The government provides liability relief to perspective purchasers.
- Clean up is on the fast track in order to dispose of sites quickly.

⁴⁰ “Land Use Directive” 1995

⁴¹ www.epa.gov/superfund/programs/reforms. April 2002

overview of the DoD reuse process in hopes of providing lessons learned for EPA from the DoD experience. Finally this Chapter will give a brief overview of two additional EPA programs that address redevelopment, the Brownfields Economic Redevelopment Initiative and Project XL.

EPA AND THE SUPERFUND REDEVELOPMENT INITIATIVE

In May of 1995, EPA, as part of the “Superfund Reforms,” issued the Land Use in the CERCLA Remedy Selection Process Directive. This Directive was intended to educate EPA staff about the types of information needed to determine future land use. The Directive specifically encouraged EPA to be proactive in community involvement early in the decision-making process in order for the community to begin formulating their future land use goals. The Directive promoted involvement of the local land use planning authorities, local officials, and the general public. It promoted the formulation of realistic assumptions regarding future land use and clarified how these assumptions can affect the baseline risk assessment, the development of alternatives, and the remedy selection process. This Directive recognized that interaction with stakeholders should serve to increase the certainty of assumptions made and confidence of expectations.⁴² This Directive had little impact on the way EPA determined future land use for the site. However, there was a little training and no associated penalties for EPA staff to implement this Directive. Most of EPA project managers had backgrounds in engineering and science and were fully engrossed in making complex scientific decisions about clean up methodologies. They had little to no experience or training in land use and were not sensitized to the importance and implication of the decisions that they were making for the future of the site and community.

Recognizing that site clean up is an instrumental step in returning contaminated sites to productive use, EPA saw the need to work more intensely with its staff and effected communities to formalize a process to establish anticipated future land use goals. In July of 1999, EPA initiated a national program called the Superfund Redevelopment Initiative (SRI) that was marketed as a tool to help facilitate the return of Superfund sites to productive reuse. Through this program EPA created staff positions for an SRI Team, launched the Superfund Redevelopment Pilot Program, developed a number of assistance tools, and promoted partnership building.

Under the SRI Pilot Program, EPA or a PRP provides up to \$100,000 in financial assistance and/or services to eligible entities⁴³ to fund reuse planning activities. Allowable activities include facilitation, coordination, public outreach, training and workshops, support for a citizen advisory group, and/or other technical assistance. The premise to the SRI Program is that if EPA gets involved in assisting communities in establishing reuse goals, the Agency will be more likely to make clean up decisions that are protective into the future. Applicants are offered several types of program assistance, including funding through cooperative agreements, access to facilitation services, and the availability of experts under the Intergovernmental Personnel Act. Recipients are required to incorporate public meetings and other community involvement forums into their programs. These grants limit planning activities to the site boundaries. The hope is

⁴² “Land Use Directive” 1995

⁴³ Eligible entities include local governments, other political subdivisions, federally recognized Indian Tribes, and states whom are not a PRP and have proposed or final on the NPL site within its jurisdiction.

that this pilot will allow communities to reclaim these properties as valuable assets. Pilots are selected based on project strategy, budget, Superfund clean up phase, anticipated role of current/future site owner, community-based planning and involvement, anticipated state role, and clearly identified value added through EPA assistance. To date, EPA has funded 50 communities in two rounds, one in 1999 and a second in 2000.⁴⁴ Most of these pilots have completed planning activities but not implementation. The second case study in Chapter 5 will show the attributes of one of these pilot reuse plans developed through stakeholder involvement.

The assistance tools created by the national program include the development and coordination of workshops given in each EPA region. This was mandatory for EPA Remedial Project Managers and other staff and highly suggested for pilot recipients. Other assistance tools included topic specific workshops, a commitment to analyze and document the economic impacts and the environmental and social benefits of site reuse, working with universities and nonprofit organizations to investigate further implications of the program, and the development of the SRI web site at www.epa.gov/superfund/programs/recycle/.

In 2001, EPA issued a second Directive: *Reuse Assessments: A Tool to Implement the Superfund Land Use Directive*. Recognizing the limitations and lack of clear guidance from the 1995 Land Use Directive, this second Directive served to elaborate on useful ways to develop a “Reuse Assessment” as a tool to help determine the anticipated future land use of the site. This reuse assessment is developed by collecting and evaluating information from records, visual inspections, and discussions about potential future land uses with local government officials, property owners and community members. Information gathered as part of the reuse assessment can be combined with other information on potential future land use obtained through the CERCLA community involvement process and through dialogue with state officials. Table 1 is the Reuse Assessment outline presented in the Directive.⁴⁵

Oftentimes the selected remedy includes leaving waste in place. Another product developed by the SRI Team are two reports titled *Reusing Superfund Sites: Recreational Use of Land Above Hazardous Waste Contamination Areas*, March 2001, and *Reusing Superfund Sites: Commercial Use Where Waste Is Left On Site*, March 2002. These are geared at assisting the EPA project manager and PRP in making technical remedy decisions for specific types of wastes and anticipated future land uses.

⁴⁴ www.epa.gov/superfund/programs/recycle/pilotprg.htm#SFpilotprg April 2002.

⁴⁵ *Reuse Assessments: A Tool To Implement The Superfund Land Use Directive*, June 2001

Table 1: Outline for a Reuse Assessment⁴⁶

Stakeholders
<ul style="list-style-type: none"> ▪ Identify stakeholders and their connection to the site, e.g., site owner, current user, developer, PRP, state and local or tribal government, community member, Community Advisory Group ▪ Determine which stakeholders are responsible for local land use determinations ▪ Document the stakeholders who participate in the Reuse Assessment
Site Description
<ul style="list-style-type: none"> ▪ Physical features: size, shape, topography, special features ▪ Existing buildings and other site improvements ▪ Site location in relation to residential, commercial, industrial, agricultural and recreational areas ▪ Current and past uses ▪ Neighboring activities and land uses ▪ Relevant public infrastructure: roads, utilities, transit, parks, etc.
Environmental Considerations
<ul style="list-style-type: none"> ▪ Contaminants and their location(s), technology constraints, to the extent this information is known ▪ Potential restrictions resulting from the environmental contamination ▪ Areas that are "clean" (i.e., where risks are acceptable, consistent with their planned use) and potentially available for immediate reuse ▪ Ground water use classification/determination ▪ Other site characteristics (e.g., wetlands, surface waters, upland habitat, forested habitat)
Site Ownership
<ul style="list-style-type: none"> ▪ Person or entity that holds title to the site; who controls access to the site ▪ Any property liens, bankruptcy considerations ▪ Site owner(s) preferences and plans ▪ Any plans for the sale of the property
Land Use Considerations and Environmental Regulations
<ul style="list-style-type: none"> ▪ Zoning ▪ Existing area master plans ▪ Federal, state or tribe and local environmental regulations impacting reuse ▪ Institutional controls (e.g., easements, covenants) already in place ▪ Historical and cultural resources
Community Input
<ul style="list-style-type: none"> ▪ Future reuses that community members would support ▪ Future reuses that community members would oppose ▪ Cultural factors that may create barriers or assets to any type of future reuse (historic buildings, Native American sacred lands) ▪ Environmental justice issues
Public Initiatives
<ul style="list-style-type: none"> ▪ Infrastructure plans that may influence the site uses ▪ Potential municipal/public uses, including park and recreational facility, transit facility, public building ▪ Publicly initiated private sector redevelopment project ▪ Funds available/committed for the redevelopment of the site

⁴⁶ *Reuse Assessments: A Tool To Implement The Superfund Land Use Directive*, Appendix A, June 2001

The SRI Team continues to evaluate policies and guidelines to determine where changes can be made to further site reuse. It may revise existing guidance and policy documents (or even develop new ones) in areas such as: making reuse assessments; incorporating reuse ideas into remedy selections; using Technical Assistance Grants, facilitation techniques, and Cooperative Agreements to support reuse activities; using Inter-Governmental Personnel Agreements to provide reuse advisors; and improving the Prospective Purchaser Agreement process. Appendix A contains a current list EPA Guidance and Policy Relevant to the Superfund Redevelopment.⁴⁷

Additionally, EPA Headquarters is preparing to launch the Land Revitalization Agenda at the end of 2002. This campaign is geared towards spreading the doctrine on the merits and benefits of site reuse in both the Superfund and Brownfields programs.

As of July 2001, only 170 of the 1,485 NPL sites have been or are planned to be put back into actual reuse.⁴⁸ Table 2 shows a breakdown on reuse types. The rest of the sites remain predominantly idle eyesores plagued with the stigma of harmful contamination and surrounded by the decaying communities that once enjoyed the benefits using this land. Yet many of the commercial projects to date have been sprawling big box retail and office parks.

Category	Primary Use ¹						Totals
	Commercial	Residential	Ecological	Recreational	Agricultural	Governmental	
Actual Use	64	3	16	15	3	10	111
Planned Use	15	--	1	4	--	2	22
Continued Use ²	25	2	--	--	1	2	30
Restored Use ³	5	1	--	--	--	1	7
Totals	109	6	17	19	4	15	170

¹ Only the primary productive use of a site is counted, although some sites may have more than one type of productive use present (e.g., both ecological and recreational use may be occurring at the same site).
² Continued Use are sites which EPA allowed be used productively during and after the clean up.
³ Restored Use has occurred at a site when a preexisting use has been halted during clean up and was resumed after the site was cleaned up.
Source: www.epa.gov/superfund/programs/recycle/list170.htm, March 17, 2002

The SRI Team and EPA regional staff have been working to help remove barriers to redevelopment. A site plan which is politically supported, financially viable, environmentally sound and offers numerous community benefits is more likely to overcome redevelopment barriers than one that is not. A community is more likely to accept and therefore support a site design that is respectful of its surroundings and offers appropriate amenities to the potential inhabitants and adjacent community. Yet to date, the SRI Team has focused on the technical, legal liability, political, community involvement, and public health protection aspects of redevelopment. Little attention has been given to specific design principles. EPA has been so focused on achieving a reuse that they see any reuse as being good use and has not invested in understanding the values that good urban design could bring to the success of these projects.

⁴⁷ www.epa.gov/superfund/programs/recycle/benefits.htm. April 2002.

⁴⁸ www.epa.gov/superfund/about.htm. April 2002.

LEARNING FROM THE DEPARTMENT OF DEFENSE IN SUPERFUND SITE REUSE

Several NPL sites are owned and operated by the U.S. Government and are referred to as Federal Facilities Superfund sites. To date EPA has listed 165 Federally owned properties on the NPL, and a large portion of these sites are owned by the Department of Defense (DoD). DoD selects bases for realignment or closure under the Defense Authorization Amendments and Base Closure and Realignment Act of 1988 and Defense Base Closure and Realignment Act of 1990. There are currently 112 Base Realignment and Closure (BRAC) sites throughout the United States, of which 35 are on the NPL.⁴⁹

The Federal Facilities Compliance Act (FFCA), waived the sovereign immunity of Federal agencies for environmental enforcement actions. The FFCA enhanced the legal authority of EPA and State regulators by permitting both to seek injunctive relief, civil penalties and other sanctions against Federal agencies, as well as to criminally prosecute Federal officials.

The disposal and reuse of closing military installations is complex and is affected by a multitude of Federal real property and environmental laws, regulations, and implementing guidance. DoD is required to remediate the site and dispose of the property quickly and efficiently to save money for readiness and other responsibilities. The reuse of these installations through their transition to civilian use is a critical part of the task and the Defense Department. DoD has a responsibility to assist the communities that hosted their installations.⁵⁰ The overall reuse and disposal process consists of a series of required activities involving both the Military Department, the Local Redevelopment Authority (LRA), and the community. This process, which is depicted in Figure 3, has three phases: base-wide reuse planning; disposal and reuse decision making; and parcel-by-parcel decision implementation. Figure 3 shows how each of these phases interact and overlap.

Base-wide reuse planning includes the LRA led development of a comprehensive land-use and redevelopment plan and the Military Department's development of an environmental impact analysis.

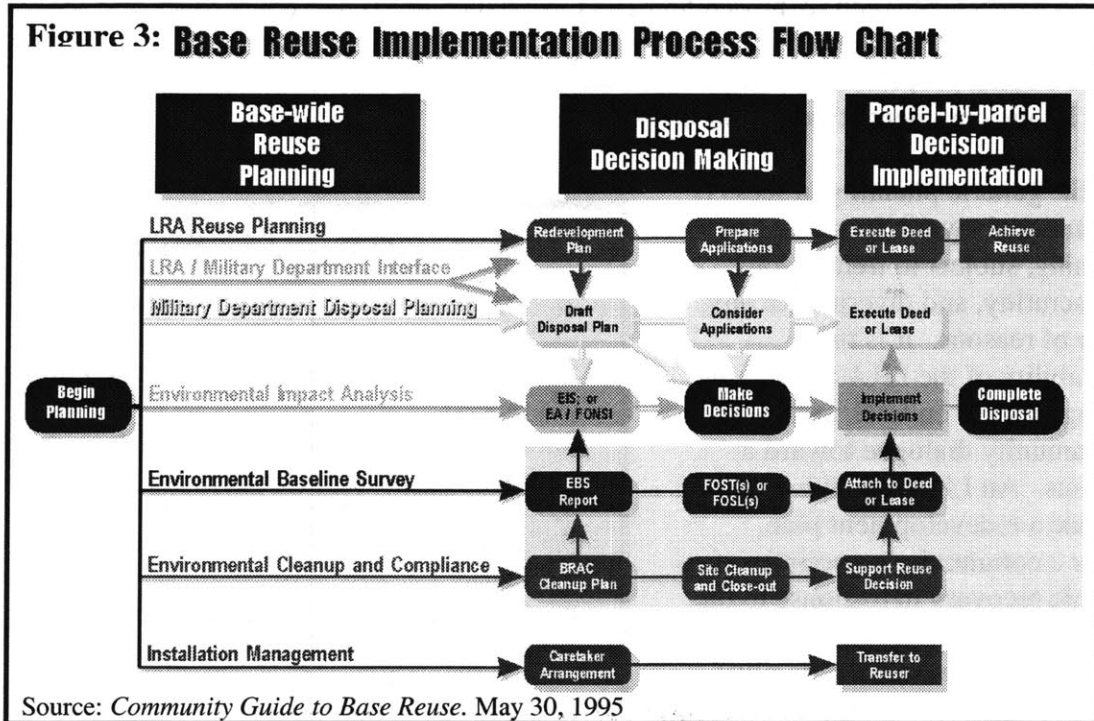
In general, DoD regulations have allowed for reuse planning guidance that provokes communities to consider quality of life-enhancing design principles beyond direct economic benefits. DoD has developed the *Community Guide to Base Reuse* to assist the LRA in developing a reuse plan.⁵¹ This guidance suggests that the LRA first engage in strategic planning. The community should establish goals and objectives of the overall recovery strategy which, in essence, address quality of life issues. Suggestions in the guidance include identifying economic goals such as job creation and diversifying the local economy. It also includes suggestions for design goals such as creating a redevelopment theme, consideration of the quality appearance, compatibility with existing and planned off-site development, and image change. Other suggestions include providing for public open space, incorporating phased development to meet short-term goals but not preclude longer-term goals, expanded site access (roads, rail and

⁴⁹ EPA Federal Facilities web site: www.epa.gov/swerffrr/sitemaps.htm, April, 2002.

⁵⁰ *Base Reuse Implementation Manual* (DoD 4165.66-M). July 1995.

⁵¹ *Community Guide to Base Reuse*. May 30, 1995

water), and maintaining a level of environmental quality. The guidance encourages the LRA to identify needs through outreach to federal, state and local entities and the public. The LRA should also use this plan as a means to gain private-sector confidence and business investment interest.



The LRA should evaluate local strengths, weaknesses, opportunities, and threats. Considerable baseline data should be developed to evaluate feasible reuse alternatives for the base and surrounding area. This analysis may identify a new competitive element of the property, a new marketing approach to the installation's unique buildings, or other major assets. Additionally, the guidance suggest that the LRA “look beyond the known” to really explore other innovative potential public and private uses as far as economic feasibility permits. Finally, the LRA should work with stakeholders to reach consensus on the strategic plan. Often this consensus serves as the basis for preliminary LRA consultations with the Military Department and other interested property users.

The guidance encourages the LRA to conduct a feasibility analysis to evaluate and develop economically and environmentally feasible land-use alternatives. This typically includes market studies and facility surveys to gauge an alternative's feasibility. This should also incorporate public costs to redevelop and operate the facilities for public uses. Decisions should weigh trying to minimize public costs, while balancing public benefit and private sector investment. Next the LRA should create a blueprint for implementation.

The LRA should work to ensure the redevelopment plan addresses a number of issues:

- Sustainable reuse, supported by a business plan
- Overall redevelopment of the installation in a comprehensive and coordinated manner

- Proposed land use, including zoning
- Future tenants or property recipients, along with the intended acquisition method for achieving the reuse
- Public involvement in the process
- Sources of available funding and/or revenue
- A balance between identified homeless assistance needs and community and economic development needs
- Personal property necessary to support reuse
- Public comments throughout the planning process

While the generic planning process is fairly straightforward, it can be time-consuming, subject to tremendous public scrutiny, and diverted for any number of reasons. It is the responsibility of the LRA to keep the planning process on track and to move the community dialogue toward a consensus. An LRA's goal is to formulate a redevelopment plan, offering a community prescription for economic recovery in response to the closure. It includes specific details on reuse of the former military facility, potentially the single greatest economic asset in the community. Base land and buildings offer an opportunity to satisfy unmet requirements for affordable housing, community facilities, and services as well as an opportunity to create jobs. The LRA's challenge is to identify local economic and community development needs, including those of the homeless, and to develop a plan that achieves a balance between them.

Ten "Don'ts" in Base Reuse Planning

1. Don't assume a new Federal or DoD mission will appear
2. Don't predetermine land uses; allow a full and open process
3. Don't seek public benefit uses exclusively; consider expanding tax rolls
4. Don't focus on short-term acquisition
5. Don't continue military characteristics; seek new image
6. Don't permit conflicting land uses
7. Don't "milk" the facility-provide for long-term maintenance
8. Don't allow "special deals"
9. Don't allow for salvaging unless it is part of a long-term plan
10. Don't give or sell more property than required for a single reuse at the expense of long-term job development

Source: Department of Defense *Community Guide to Base Reuse*, Office of Economic Adjustment Office of the Assistant Secretary of Defense (Economic Security) May 30, 1995

When the LRA develops the reuse plan, the Military Department's conducts an environmental assessment of the site. This includes an environmental impact analysis and work under the RI/FS NPL process.

Base-wide reuse planning involves teamwork from the Military Department, the on-site Base Transition Coordinator, the DoD Office of Economic Adjustment (OEA) Project Manager, the LRA, local and State government, and other Federal, State and local reuse planning and implementation organizations.

The Military Department's **disposal decision making** phase involves management of site clean up under the BRAC Environmental Process. DoD works the LRA or others to coordinate remediation, property conveyances, and redevelopment. The BRAC environmental planning process consists of five principal steps, which can be described as follow:

A BRAC Clean up Team (BCT) is designated for each base where property will be made available to the local community for reuse. The BCT will include a BRAC Environmental Coordinator, and representatives from the State environmental agency and EPA. The BCT works closely with the LRA, giving clean up information and receiving feedback on reuse priorities and decisions. The BCT reviews the status of all environmental programs (including clean up, compliance, and natural and cultural resources programs) at the base, as well as the LRA's redevelopment plan.

The BCT identifies action items requiring further effort and develops a strategy for base environmental programs to incorporate both reuse and environmental priorities. A BRAC Clean up Plan (BCP) is prepared describing the status of base environmental programs and identifying strategies and schedules for integrating the environmental clean up with the community reuse plan. As contamination is remediated, the BCP is updated to reflect clean up and site close-out actions that have been taken, as well as any changes in community redevelopment needs.

Property that is being cleaned up can often be put into productive economic reuse by either lease or deed, with the Military Department and the BCT working to ensure that clean up activities do not unnecessarily impede reuse activities.

The BRAC policy directs the BCT to be cooperative and forthright and to provide opportunities for and encourage public comment on documents and proposed activities. The BCT should be responsive to comments and provide information in a timely manner. The Community Involvement Guidance allows the creation of a Restoration Advisory Board (RAB). The purpose is to involve in the clean up program the community near a closing base by making information available, providing opportunities for comment, and establishing and seeking public participation. The RAB shall consist of representatives from DoD, EPA, state representatives and members of the local community and acts as a forum for discussion and exchange of clean up information between Government agencies and the public. RAB members should reflect diverse interests within the community. Through the RAB, stakeholders may review progress and provide input to the decision making process, recommend priorities among sites or projects, identify applicable standards consistent with CERCLA, and propose remedies consistent with planned land use. The RAB shall meet regularly at convenient times and be open to the public. Public comments will be actively solicited and considered before documents are finalized. DoD also provides grant funding to RABs under the Technical Assistance for Public Participation Program.

Once disposal decisions have been made, the Military Department conducts **parcel-by-parcel decision implementation** for each disposal parcel. This phase lasts until the property has been conveyed and includes environmental activities that must be performed prior to deed transfer.⁵²

⁵² www.acq.osd.mil/installation/reinvest/sect_2.html#reuse. April 2002.

Several bases have undergone closure and reuse planning under this guidance and are now in implementation. Case Study III in Chapter 5 will present the design of the reuse plan for a BRAC NPL facility.

EPA'S BROWNFIELDS ECONOMIC REDEVELOPMENT INITIATIVE AND PROJECT XL

EPA's Brownfields Economic Redevelopment Initiative is designed to empower states, communities, and other stakeholders in economic redevelopment to work together in a timely manner to prevent, assess, safely clean up, and sustainably reuse brownfields. This is a grant program to provide financial and technical resources to communities for three types of activities. The assessment demonstration pilot programs funds up to \$200,000 over two years to identify and priorities sites for environmental assessments. Priority is typically given to properties with the most redevelopment potential. The job training pilot programs funds up to \$200,000 over two years to provide training for residents of communities affected by brownfields to facilitate clean up of brownfields sites and prepare trainees for future employment in the environmental field. The clean up revolving loan fund programs fund up to \$500,000 over five years to capitalize loan funds to make loans for the environmental clean up of brownfields.⁵³ When conceived, this program was focused on economic development. As EPA became more involved with issues of redevelopment and attributes for enhancing quality of life the program expended to include non-economic development projects aimed at enhancing the public realm such as open space. EPA's authority under this program is somewhat limited because the eligible sites typically do not involve EPA enforcement or oversight.

Another one of EPA's programs is Project XL which stands for "eXcellence and Leadership" This is a national pilot program that allows state and local governments, businesses and federal facilities to work with EPA and develop innovative strategies of achieving environmental and public health protection. In exchange, EPA issues regulatory, program, policy, or procedural flexibilities to conduct the experiment. Some selection criteria for this program include efforts that produce superior environmental results beyond those that would have been achieved under current and reasonably anticipated future regulations or policies; are supported by stakeholders; achieve innovation/pollution prevention; establish accountability; present economic opportunity; and incorporate community planning.⁵⁴ This is an enforcement driven program.

One example is the Atlantic Steel Project in Atlanta Georgia. Atlantic Steel was designed as a smart growth project focused on enhancing urban livability through the redevelopment of a former steel mill in midtown Atlanta. The 138-acre site is now slated to become a pedestrian-friendly commercial and residential development that will provide 2,400+new residences and nearly 20,000 new jobs. The location and design elements of the site and its connection to an existing transit system work together to combat the auto-oriented nature of growth in the Atlanta area. Because Atlanta was out of compliance with federal transportation conformity requirements under the Clean Air Act, the metropolitan area was not allowed to use federal funds to add to its highway system or construct transportation projects that require federal approval.

⁵³ U.S. EPA web page on the Brownfields Economic Redevelopment Initiative www.epa.gov/superfund/brownfeids. April 2002.

⁵⁴ U.S. EPA web page on Project XL www.epa.gov/projectxl. April 2002.

This prohibition extended to a proposed bridge connecting the development to existing roads and highways, and to existing mass transit. EPA used the flexibility of Project XL to approve the project as a Transportation Control Measure (TCM) under the Clean Air Act. Without this designation Atlanta's nonconformity status would have prevented the construction of the bridge. In return, the Atlantic Steel project is expected to lead to reduced future emissions growth through the use of mass transit, shorter trips for residents and workers, access to services within walking or biking distance, revitalization of an urban community, and productive reuse of land that was previously considered a liability.⁵⁵

⁵⁵ From the U.S. EPA Project XL web site www.epa.gov/projectxl. May 12, 2002.

4 Discussing Urban Design Principles

In order to move beyond valuing redevelopment for mere economic benefit, the EPA Superfund Redevelopment Initiative Team must begin a dialogue about what attributes make up a good urban design. This dialogue needs to evolve into EPA's taking a stance on key design principles and providing clear guidance from which communities can lay a foundation and purpose for their stakeholder involvement process. These principles can be derived from many sources, including urban design scholars and professionals, and public, non-profit and private organizations and agencies. EPA can also learn from the DoD experience and its own Smart Growth Initiative. This Chapter identifies some urban design philosophies held by professionals in the field today to be used as a starting point in these discussions. This Chapter will present examples of elements of a successful project and then review some common stakeholder participation practices and design principles. This will be followed by a brief discussion of the political, regulatory and economic factors that enter into an urban design proposition. Finally the design principles will be categorized as a way to evaluate the design attributes of the three case studies presented in Chapter Five.

ELEMENTS OF A SUCCESSFUL PROJECT

In *A Theory of Good City Form*, author Kevin Lynch describes his normative theory, or "how to tell a good city when you see one." He believed that it was vital for a "good city" to make connections between human values and "settlement form." He describes settlement form as a "special arrangement of persons doing things, the resulting spatial flows of persons, goods and information, and the physical features which modify space in some way significant to those actions, including enclosures, surfaces, channels, ambiances, and objects. Further, the description must include the cyclical and secular changes in those spatial distributions, the control of space, and the perception of it." Lynch discussed how a complete theory deals with form and process. His requirements for good city form under this normative theory include:

1. Start from purposeful behavior and the images and feelings which accompany it.
2. Deal directly with settlement form and its qualities, and not be an eclectic application of concepts from other fields.
3. Connect values of very general and long-range importance to that form and to immediate, practical actions about it.
4. Be able to deal with plural and conflicting interests and to speak for absent and future clients.
5. Be appropriate to diverse cultures and to variations in the decision situation (variations in the centralization of power, the stability and homogeneity of values, the level of resources, and the rate of change).
6. Be sufficiently simple, flexible and divisible that it can be used in rapid, partial decisions, with imperfect information, by lay persons who are the direct users of the places in question.
7. Be able to evaluate the quality state and process together as it varies over a moderate span of time.
8. While at root a way of evaluating settlement form, the concepts should suggest new possibilities of form. In general, it should be a possible theory, not an iron law of

development, but one that emphasizes the active purpose of participants and their capacity for learning.⁵⁶

General United States approaches to addressing urban development have evolved over time. In the 1960s, urban design mostly meant tearing down city blocks for “modern” high-rise development under the Federal Urban Renewal Program as part of the Housing Act of 1954. The 1970s Federal Urban Development Action Grant (UDAG) Program shifted the focus to policy development. The 1980s saw a shift towards the institutions of design where everyone designed together and public/private partnerships were formed to more effectively reach a common goal with such programs as the Community Development Block Grant (CDBG) under HUD, which allowed local communities to make decisions on urban development issues. By the 1990s urban design had become a multifaceted process which involved multiple stakeholders with varied agendas coming together to formulate a consensus on desired outcomes like the Enterprise Zones/Enterprise Communities created by the Housing and Community Development Act in 1988.⁵⁷

Today urban design is a complex proposition driven by political, economic, social, and environmental issues and the general quest for enhancing quality of life characteristics. The need for a comprehensive strategy to address issues of traffic congestion, loss of open spaces, sprawl and decaying urban areas has caused many to rethink how we develop our land. Strategies for maintaining economic growth while also curtailing costly sprawl on greenfield sites and preserving quality of life is an increasing priority for governmental agencies, political figures, developers, and local communities.⁵⁸ The process to place making is regarded as a crucial part of the ultimate success and sustainability of an urban design. This planning process includes the ongoing **stakeholders’ participation** in identifying values and goals and the **design** of programming and a physical form which meets desired objectives. Lynch’s approach to good city form provides valuable insight as to what this process should be about. The goal of urban design is the enhancement of total social well being.⁵⁹

Some of the most successful U.S. urban designs have been documented by the Rudy Bruner Foundation in the Rudy Bruner Award for Urban Excellence. The goals of this award are to inform policy development, identify innovative urban places and celebrate their contribution to cities. Submitted project must be of a real place that shows successful integration of competing development pressure. Although the Bruner Awards do not dictate a selection criteria to its jurors, the award generally looks at the transformation of neighborhoods, cities and regions through innovation, cooperation and effort. The jurors for this award are made up of practitioners including architects, urban planners, mayors, bankers, directors of non-profit organization, developers and others. The Bruner Award winners are socially supported, aesthetically pleasing, and economically viable urban places. They represent innovation and success and are evaluated based on how they lasted over time, how they have evolved under changing circumstance, and what we can learn when the project is viewed as a whole.

⁵⁶ Chapter 2: “What is the Form of a City, and How Is it Made?” in *A Theory of Good City Form* by Kevin Lynch.

⁵⁷ “HUD’s Stewardship of National Urban Policy: A Retrospective View.” 1995

⁵⁸ “Growth and Quality of Life Tool Kit”, www.nga.org/center/topics/1,1188,D_404,00.html December 2001

⁵⁹ Chapter Four: “Land Use The Forgotten Agenda”, *Thinking Ecologically: the Next Generations of Environmental Policy*. pp.65- 66. 1997.

As an example, in the 1989 Burner Award, the jury looked at the value of the project uses and the effects on the users and surrounding community. They evaluated place, process, politics, successes and failures, potential vulnerabilities, effects and impacts on constituents, and the financial bottom line. They felt that these projects had a positive impact on low income, elderly, disadvantaged community, and/or distressed communities and the final product was much more than the economic profitability to a private investor. They concluded that participatory democracy did indeed work by empowering stakeholders, conveying consistent goals to newcomers, and maintaining connections to communities. The public, non-profit and private sectors all played a role in these community development projects. Bruner also concluded that a design must be durable and flexible in order to evolve, change, and grow over time. Finally, implementation needs to provide for maintenance provisions, and sufficient construction funds must be available so that quality is not jeopardized to save money.

In the 1999 Bruner Awards, the jury looked at the history, vision, organization/leadership, design, programs, urban context, maintenance, operations and security, financing, partnerships, future plans, and impact of the program. The jury also assessed the project's success by asking, "What kinds of places make neighborhoods and cities better places to work, live and play? How did these places come into being? What visions powered their creation? How did these visions become reality? What obstacles had to be overcome? What makes a place important in its urban context?"⁶⁰ The jurors looked for projects that represented innovative thinking about urban place making, and evaluated the urban architecture not by how flashy the buildings were, but by the multidimensional, complex relationships between process, place and values. They looked at buildings, programming, public space, edge, streetscape, pedestrian, transit, access, maintenance, operation, security, interactivity with different programs and people, creative financing, extractions, public-private partnerships, and the connection with surrounding neighborhoods.

Some of the exceptional qualities of the finalists included visionary thinking, dedicated leaders, and a strong combination of effective process, meaningful values, and good design. It was not necessary for a particular building to have exceptional design qualities and, in fact, in many cases, the jurors highlighted both strengths and weaknesses in the building designs within the urban design. This award cycle recognized process and comprehensiveness, and it concluded that the designs do work well for all their grace and beauty, function, form, and flaws.

STAKEHOLDER PARTICIPATION

Stakeholder participation is a process that involves bringing together residents; NGO's; environmental and other interest groups; business; industry; and local; state; and Federal governments in order to develop effective planning strategies for growth management. This participation, which is an open processes aimed at devising and implementing redevelopment plans and programs, is critical. Without such involvement, planning and redevelopment efforts are unlikely to be consistent with local visions of the neighborhood, and therefore unlikely to receive citizen support.⁶¹

⁶⁰ *Commitment to Place: Urban Excellence & Community, Rudy Burner Award for Urban Excellence 1999. 2000.*

⁶¹ Section IV. "Lessons Learned", "Urban Vacant Land Redevelopment Challenges and Progress." 2001.

As discussed in Chapter 3, EPA has a significant investment in the development of a comprehensive Superfund community involvement program. This program is primarily geared to involving the community in the site remedy decisions and clean up implementation. To a much lesser degree, EPA has begun investment in planning for revitalization through the Superfund Redevelopment Initiative (SRI) and innovative site-specific efforts by EPA staff. SRI pilots are required to incorporate public participation into their planning. Many of the SRI pilots have developed programs to build consensus and identifying stakeholder needs through design charettes and other community-visioning activities. They view this as paramount to developing conceptual images and potential programming for reuse. The first set of reuse plans is emerging from the pilot communities

Stakeholder participation has predominantly been a publicly driven process. The National Governor's Association believes that it is worth the effort to understand the preferences of the community and to identify approaches that work. They found that visioning sessions were an effective technique in providing stakeholders with images of different growth scenarios. Stakeholders are able to visualize the implications of future population projections and land-use trends and understand how their objectives, such as conserving open space and minimizing infrastructure costs, can be met by guiding growth.⁶²

The U.S. Department of Housing and Urban Development (HUD), together with the Partners for Livable Communities, describe a model process in their jointly published document "In Pursuit of Livability: A Strategic Planning Cooperative" (January 1997). This process includes five components: broad-based public participation, community visioning, and goal setting; accountability through the use of benchmarks and indicators; a consolidated planning framework; aggregation for regional improvement strategies; and an inclusive stewardship body. These components were developed from a series of workshops held for several community leaders to evaluate the trends related to each element and identify how the components can be integrated into a holistic approach to community planning.⁶³

As discussed in Chapter 3, The Department of Defense (DoD) has established community involvement guidance for bases being closed or realigned pursuant to the Base Closure and Realignment Act of 1988 or the Defense Base Closure and Realignment Act of 1990. The purpose of the guidance is to involve in the clean up program the community near a closing base by making information available, providing opportunities for comment, and establishing and seeking public participation on a Restoration Advisory Board (RAB).

Several other Federal agencies and departments, together with corresponding state agencies, have direct and indirect influence on the future shape of cities and have begun to require and engage in stakeholder participation in project development. Some examples include the Department of Transportation through the Transportation Equity Act for the 21st Century (TEA-21), HUD through the Economic Development Initiative (EDI), the Department of Interior with the development and maintenance of national parks and heritage rivers, and the Department of Commerce through the Economic Development Administration (EDA), whose mission is to

⁶² *Growth Tool Kit: Engage the Players and Build Support*, April 2002.

⁶³ This information was obtained from an excerpt on the publication "In Pursuit of Livability: A Strategic Planning Cooperative" listed on www.huduser.org/publications/urbaff/pursuit.html. April 2002.

empower distressed communities to develop and implement their own economic development and revitalization strategies.

Ultimately this participatory process needs to lead to a quality urban design endorsed through consensus by the stakeholders.

DESIGN PRINCIPLES

In *Communities of Place*, Peter Calthorpe and William Fulton believe that America has had a shift from communities of place to “everywhere communities.” An “everywhere community” has a nowhere quality and assumes that the social, economic and cultural needs of a metropolitan population can be satisfied in a manner that is completely divorced from the physical surroundings in which that population lives its daily lives. Each land type has been isolated and developed homogeneously by specialists. With the physical separation of aspects of our community, our social lives become physically separated, and we begin to define ourselves by our communities of interests rather than communities of place. Technology, which provides such connections as the telephone, internet and automobile, is also allowing for further separation. The region is a large scale of economic, ecological and social interactions. The neighborhood is a substructure of the region that provides opportunity for ground-level social fabric and community identity. The elements of a community of place are the combination of many aspects of living: public, private, work and home. It is important to have mixing of different kinds of people and activities in close proximity and to provide places for them to interact. This allows for everyday encounters and random meetings, fostering a sense of place.⁶⁴

Design matters, and Calthorpe and Fulton believe the problems with most urban designs are that they have been modeled after flawed principles. A design for a community of place, or place making, is about providing shared space which has social values and geological qualities unique to that neighborhood. A community needs to incorporate principles of diversity differentiating the unique shapes to quality of place and history. This is the reinforcement of local identity, history, and character in the design. There should be conservation and care given to existing resources whether natural, social, or institutional. Design should be on a human scale in order to bring individuals back into picture from remote and mechanistic concerns. Streets should be walkable and favor pedestrians, incorporate traffic calming techniques, distribute usable small parks, activate edges, and provide for orientation and a clear sense of location. They remind us that all of “these qualities are hard to design but easy to design away.”⁶⁵

The Urban Land Institute is a non-profit education and research institute made up of members from the developers, builders, property owners, investors, architects, real estate brokers, planners, public sector, appraisers, engineers and others. In *ULI on the Future Creating More Livable Metropolitan Areas*, ULI discusses that a “successful development in the future will be by those who best understand how to blend the various components of physical and social planning.” ULI believes that the ingredients for fostering community include physical design and the “software side” of a community, or the “social infrastructure.” “ULI needs to be at the

⁶⁴ Chapter 2: “Communities of Place,” *The Regional City* 2001.

⁶⁵ Ibid.

forefront to build stronger communities that merge physical design with maximum opportunity for social connectiveness”⁶⁶.

Design should be sensitive to urban sprawl. These philosophies also lend to smart growth goals. In *Thinking Ecologically*, Chertow and Esty describe their perspective that the cost of sprawl is “cookie cutter houses, subdivision void of character, congestion, ugly commercial stripes at the expense of townscapes, city core, open space, productive farmland and wildlife.”⁶⁷

As a result of growing concerns on the impact of sprawl on urban, suburban and rural neighborhoods, the National Governors’ Association established several smart growth principles in 1999, which are designed to give ways to preserve, protect and economically develop communities and valuable natural and cultural resources. Smart growth understands how quality of life is impacted by conventional growth such as traffic congestion and disinvestments in urban areas. The environment is also impacted by consequences of growth such as non-point source runoff and loss of open space. The ten smart growth principles include concepts to mix land uses; take advantage of existing community assets; create a range of housing opportunities and choices; foster “walkable” close-knit neighborhoods; promote distinctive, attractive communities with a strong sense of place, including the rehabilitation of historic buildings; preserve open, space, farmland, natural beauty and critical environmental areas; strengthen and encourage growth in existing neighborhoods; provide a variety of transportation choices; make development decisions predictable, fair, and cost effective; and encourage citizen and stakeholder participation in development decisions.⁶⁸

The International City/County Management Association (ICMA) is the professional and educational organization representing appointed managers and administrators in local governments throughout the world. In *Why Smart Growth: A Primer*, ICMA discusses market research that showed consumers were unhappy with the current patterns of development. One major objective was the perception that density is associated with noise, safety, privacy and car access. This can be overcome with the use of appropriate design elements. Growth adds services, creates opportunity and enhances access to amenities. Designers need to look into the future and try to understand where communities are growing on a regional scale. The process needs to encourage the formation of groups with diverse membership. These groups need to come together to focus on common interests and create a vision for the future. The design process needs to project impacts and opportunities of the design into the future and to pay attention to indirect effects and externalities. When smart growth ideas are put in place “successful communities do tend to have one thing in common, a vision of where they want to go and of what things they value in their community and their plans for development reflect these values.”⁶⁹

⁶⁶ “Building Communities in American Suburbs,” *ULI on the Future Creating More livable Metropolitan Areas*. 1997.

⁶⁷ Chapter Four: “Land Use the Forgotten Agenda”, *Thinking Ecologically: the Next Generations of Environmental Policy*. pp.65- 66. 1997.

⁶⁸ These goal are also supported by the EPA New England Smart growth Team as published in the 2000 publication of *How You Can Help Your Community Grow Smart*.

⁶⁹ *Why Smart Growth: A Primer*. 1998

The principles behind Transit Oriented Development (TOD) are another aspect of smart growth. The “everywhere community” has fostered a dependency on automobiles for most activities in urban fringes and suburban areas. TOD seeks to provide transportation choices and looks to concentrate new growth and redevelopment along transit corridors. These concentrated areas have mixed land uses at high densities. They are walkable, pedestrian friendly and safe communities with easy access to such transit modes as trains, buses, trolleys, bikeways, and ferries. Well planned TOD projects produce mixed-use growth with a variety of housing types at different densities and costs. Retail uses are also generally at higher densities and intensity of uses than surrounding areas. TOD also provides public spaces as a focal point of activities.⁷⁰

In *Best Development Practices: A Primer for Smart Growth*, ULI in cooperation with the Smart Growth Network, identified best practices in design for developers to integrate.⁷¹ These conclusions were based on in existing projects. Here ULI suggests that the best land use practices are those with mixed land uses and concentrated development. They suggest building cluster developments with higher densities to allow for more open space. This will result in reduced vehicle trips and allows more freedom for those who cannot drive. Overall site costs decrease by reducing site preparation and grading, reducing the length of residential streets and utilities, and provides an opportunity for the use of natural drainage in lieu of costly curbs and gutters, inlets, and underground storm sewers. Ultimately, this will result in positive fiscal impacts on local governments, increases residential property values, and create a greater sense of community.

The best transportation practices are those that disperse and calm traffic and support alternative modes. Here ULI strives for the best of both worlds: the mobility of the traditional urban grid and the safety, security, and topographic sensitivity of the contemporary suburban network. They suggest hybrid networks with short, curved stretches following the land contours and short loops and cul-de-sacs as long as the higher-order street network remain. These “higher-order street networks” are main arterials, collectors, and subcollectors that carry through-traffic. Internal pathway systems, if properly designed, can knit a community together in a way that sidewalks cannot.

The best environmental practices identified by ULI reserve entire ecosystem and mimic nature. Patches should be preserved as large as possible. Most species at risk require good-sized patches or specialized habitat or both. Where land is limited, patches should be as nearly circular as possible to minimize edge effects. Edges invite competition from generalist species, predation, and human disturbance. The edges themselves should be “feathered” wherever possible. When possible, stormwater infiltration techniques should be used for stormwater management. Infiltration retains run-off water on-site in basins, trenches, or recharge beds under pavements, allowing infiltration into the ground. Where soils and water table elevations permit, infiltration can maintain the water balance in a basin and mitigate adverse stormwater-related impacts of development.

The best housing practices have mixed housing types and find innovative design techniques to cut housing costs. ULI suggest that small clusters of housing, similar in type and price should be

⁷⁰ *Growth Tool Kit: Engage the Players and Build Support*. December 2001

⁷¹ *Best Development Practices: A Primer for Smart Growth*. 1998

placed next to other small clusters. Social interaction needs only to be promoted in common areas and common facilities. Use cost effective site development in the construction process, and incorporate energy saving features.

Smart Growth is development that serves the economy, the community and the environment. It changes the terms of the development debate away from the traditional growth/no growth question to “how and where should new development be accommodated.” EPA’s mission is to protect health and the environment. How and where communities grow and develop impacts public health and the environment. Smart growth promotes practices that can lessen the environmental impacts of development including: compact development, reduced impervious surfaces and improved water detention, safeguarding of environmentally sensitive areas, mixing of land uses (e.g., residential, office, and retail), transit accessibility, and support for pedestrian and bicycle activity and other micro-scale urban design features. In practice, these techniques have created tangible environmental improvements. Therefore, EPA works with states and communities to find ways to grow while minimizing environmental and health impacts. Studies have demonstrated that smart growth development approaches have clear environmental benefits, including improved air and water quality, increased wetlands preservation, more brownfields sites cleaned and reused, and increased preservation of open spaces.⁷²

POLITICAL, REGULATORY AND ECONOMIC CONSIDERATIONS

Urban design is about the combination of governmental policy and place-based approach.⁷³ The political process involves governmental decision makers and regulatory requirements. City government needs to give clear signals to developers that they promote redevelopment and are willing to ease regulatory process given a responsible design proposal. Local Government and community tools to directing growth include: comprehensive regional plans, transferable development rights, tax increment financing, variable use value assessment, building codes and ordinances, linkage fees and impact assessments, urban growth boundaries, infrastructure investment to shape development, community visioning, and development impact assessments.⁷⁴

Developers want policy tools to be applied quickly and consistently, particularly with enforcement, foreclosure, and property disposition. This requires a commitment of resources from many governmental entities, ranging from enforcement personnel to financing to foreclosure and judicial priority. “The public sector can play a pivotal role in addressing the urban vacant land issue: by eliminating policy and regulatory barriers to redevelopment; by adequately maintaining publicly-owned properties and facilities in distressed neighborhoods; by ensuring adequate police, fire and other municipal services; and, perhaps most importantly, by creating an atmosphere that encourages the private sector and private-public partnerships to reinvest in the inner city.”⁷⁵

⁷²US EPA Smart Growth Initiative, www.epa.gov/dced/eb.htm. April 2002.

⁷³ “Urban Vacant Land Redevelopment Challenges and Progress.” 2001.

⁷⁴ *Why Smart Growth: A Primer*. 1998.

⁷⁵ Section IV. “Lessons Learned”, “Urban Vacant Land Redevelopment Challenges and Progress.” 2001.

States and local governments are supporting TOD by offering planning and zoning assistance, increasing development certainty in areas adjacent to transit stops, providing incentives, improving public education, and enhancing government coordination.⁷⁶

Governors also have enormous opportunities to improve statewide planning to enhance and shape economic development, protect natural resources, and preserve each community's quality of life. Although most land use planning regulations rest at the local level, the state laws and policies can help local governments better handle complex land use issues and the high infrastructure cost.⁷⁷

Redevelopment is a real estate deal, and the economics have to add up. A successful project needs public/private partnerships. Local government, environmentalists, and real estate developers have much to gain by working together to make exceptional smart growth development commonplace. "When a development is profitable, when it leverages or enhances existing public investment and maintains or improves environmental quality, consensus among the many stakeholders that affected development decisions is possible."⁷⁸ The Urban Land Institute recognizes that the terms of financing for the developer can be problematic. It supports efforts to get community buy in and project backing and advocates for the redistribution of risk among parties.⁷⁹

EPA has created the Smart Growth program to provide assistance to state and local governments in addressing the multiple and varied issues associated with dispersed development. The EPA cannot and should not be a national or regional development board. But states and the Federal government can and must help municipalities grow smarter. EPA can help states and communities realize the economic, community, and environmental benefits of smart growth by:⁸⁰

- Providing information, model programs, and analytical tools to inform communities about growth and development.
- Working to remove federal barriers that hinder smarter community growth.
- Creating new resources and incentives for states and communities pursuing smart growth.

CASE STUDY APPROACH

Three representative case studies are presented in Chapter Five in order to gain a greater understanding of EPA's progress to date at integrating good urban design on Superfund Redevelopment Projects. This is useful in making recommendations for change so that EPA move towards redevelopment goals that include place making for the enchantment of social well being⁸¹

⁷⁶ *Growth Tool Kit: Engage the Players and Build Support*. December 2001,

⁷⁷ "Growth and Quality of Life Tool Kit", www.nga.org/center/topics/1,1188,D_404,00.html December 2001.

⁷⁸ "Smart Growth in Our Future?" *ULI on the Future: Smart Growth Economy, Community, Environment*. 1998

⁷⁹ *Turning Brownfields into Greenback: Developing and Financing Environmentally Contaminated Urban Real Estate*. 1997.

⁸⁰ US EPA Smart Growth Initiative, www.epa.gov/dced/eb.htm. April 2002.

⁸¹ Chapter Four: "Land Use The Forgotten Agenda," *Thinking Ecologically: the Next Generations of Environmental Policy*. pp.65- 66. 1997.

The first case study looks at the redevelopment of the Industri-Plex site. This project evolved from a Consent Decree with EPA and the PRPs as a result of CERCLA enforcement activities. This represents an innovative approach by EPA to try and meet both remediation and redevelopment goals and is regarded as an EPA national model. This site process was initiated prior to the SRI program and is nearing construction completion. The second case study looks at Silresim Chemical Company site. This project is the result of the SRI pilot program where EPA provided \$100,000 to the city for reuse planning activities. This site is still in the conceptual design phase. The last case study is of Fort Devens, a Superfund site under DBRAC. This process involved the formation of a Local Redevelopment Authority under the base closure regulations. This site is in construction and will be phased over several years.

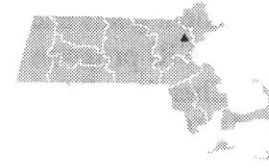
Each of the three case studies undertook a stakeholder participation process and developed a reuse plan. Chapter Five will summarize each case by presenting a brief site history, an explanation of the remedial activities to date, a description of the reuse process, a discussion of EPA's efforts to integrate remedy and reuse goals, a diagrammatic reuse plan, and a summary of the community benefits. This will be followed by a critique of both the reuse process and design.

The reuse process will be evaluated against the ideals presented in this Chapter. For example, an effective process is one that includes a diverse and representative stakeholder group. The process should involve incorporating meaningful values, conducting visioning sessions, goals setting, and consensus building. There should be opportunity for the greater general public to way into the process and plans. The process should look towards creating dedicated leadership with accountability, and acknowledge regional implications.

The design attributes will be grouped into five categories: land use, transportation, environment, implementation, and programming. The design will be evaluated against key principles discussed in this Chapter such as adherence to the ten smart growth principles, the TOD ideals, and/or the ULI best practices. Other desirable attributes include a design which is flexible, adaptable, provides for orientation, takes advantage of the distinct qualities of the place, and provides opportunity to mix people and activities.

5 Case Studies

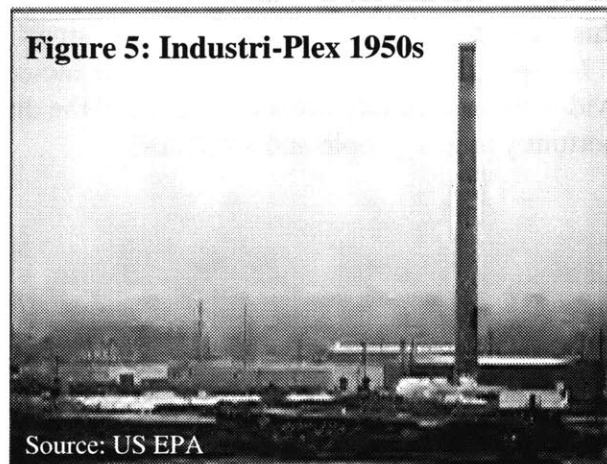
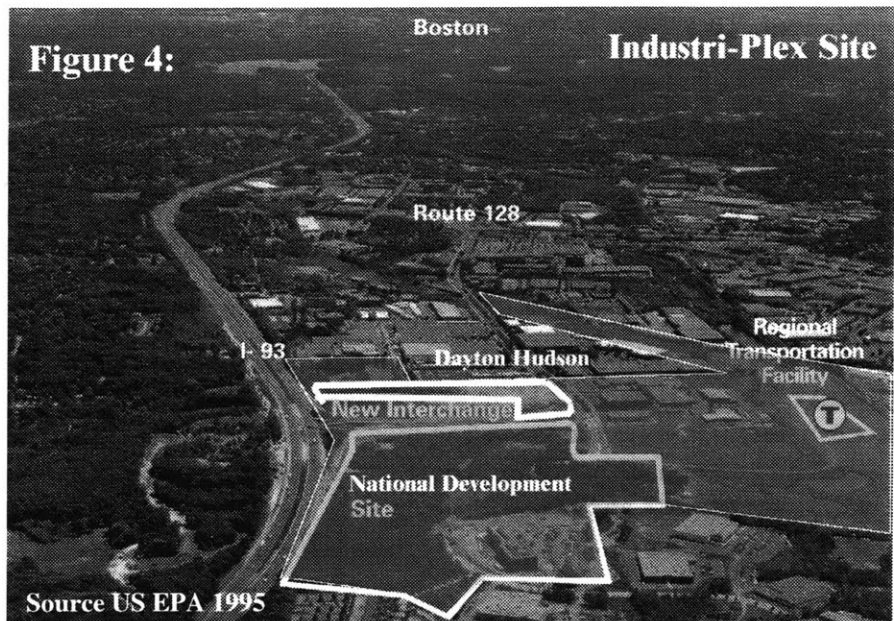
CASE I: INDUSTRI-PLEX, WOBURN MASSACHUSETTS



Site History

The Industri-Plex site is a 245-acre parcel located in Woburn, Massachusetts, twelve-miles north of Boston and just west of the Interstate 93 and Route 128 interchange. The site is situated west of the Aberjona River, a tributary to the Mystic River, and the Boston & Main Railroad runs north-south through the site on the western border.

The site has experienced a long history of chemical manufacturing use. Robert Eaton purchased this land undeveloped in 1853 to build a manufacturing plant. He established the Merrimack Chemical Company on the site in 1893 to produce chemicals for the local textile, tannery and paper industries. At the time Woburn was known as “Tan City,” twenty tanneries operated within the city limits. The Merrimack Chemical Company continued to grow and expand the business. In 1899, they acquired the William H. Swift & Company of Boston, an arsenic insecticide manufacturer, and moved this operation to Woburn. At the turn of the century, Merrimack Chemical Company was one of the largest chemical plants in the country.⁸² By 1915, Merrimack Chemical Company also established the New England Manufacturing Company, a producer of TNT and other chemicals used in explosives. These explosive products were produced on the site until 1920. Monsanto Chemical Company purchased the Merrimack Chemical Company in 1929 to produce similar chemical products. In 1931 Monsanto moved their operation to Everett and the F&L



⁸² *A Civil Action*, p. 13.1996

Land Salvage and Improvement Company purchased the site to salvage existing plant equipment. By 1934, New England Chemical Industries bought the site and built a plant to produce animal hide bone glue and “technical gelatin”⁸³. Consolidated Chemical Industries purchased the site and company in 1936 to produce similar glue products until 1969. Consolidated was purchased by Stauffer Chemical Company in 1961 to produce animal glue and grease.⁸⁴

For over 100 years, these industries disposed of raw and chrome-tainted animal hides and other waste chemicals generated during the manufacturing process on the site lowlands, wetlands and shallow ponds. Solid wastes were also used as construction material to build dikes and levees for liquid waste containment. In some site areas, deposited waste piles exceeded 40 feet above natural grade.

Mark Phillip Trust (MPT) purchased the 245-acre site from the Stauffer Chemical Company, in 1969 in speculation of subdividing the property for a new industrial park to be called "Industri-Plex 128." Industri-plex 128 was to be a typical sprawling low-density industrial park design of the late 1970s. MPT began laying roads and other infrastructure and selling portions of the property. As parcels became available, they were sold off for single-story industrial and commercial business with large paved surfaces for parking.

In the late 1970s, MPT began to uncover buried animal hides during excavation operations and were stockpiling the exposed waste on site. Strong odors from these hides were strong and began affecting area residents and businesses. Local communities were extremely upset over what became known as the "Woburn Odor," and they alerted the state and Federal agencies.⁸⁵

At the same time the city of Woburn was experiencing the trauma of discovering a potential cluster of childhood leukemia cases that were speculated to be linked to contamination in the public drinking water supply at Wells G and H (Wells G and H were placed on the NPL in 1992). The community was at a loss to understand the implication of the drinking water contamination. The Wells G and H site is located one mile south of Industri-Plex along the Aberjona River.

EPA Remediation Activities^{86,87}

The EPA issued an injunction against MPT in 1980 to discontinue excavation and wetlands filling activities. The State Department of Environmental Quality Engineering (now MA DEP) took initial measures in 1980 to place a temporary cover on portions of the site with exposed waste, and EPA installed a chain link fence in 1981 to limit access to the contaminated areas. At the time of the order, MPT still retained ownership of 120 acres of undeveloped land. EPA discovered that the past industrial uses had left behind large waste piles of animal hides that contaminated the soil with lead, arsenic, and chromium, and the groundwater with benzene,

⁸³ From the US EPA Record of Decision document, Summary of Site Ownership Table, pg 5. 1996.

⁸⁴ Historical site owners obtained from an article “65 Chemicals Found in Subsurface Water” by Charles C. Ryan in *The Daily Times*, Woburn, Mass, June 9, 1981.

⁸⁵ “Superfund Attorneys Make Site Reuse Possible Industri-Plex.” 2000.

⁸⁶ “Industri-Plex Superfund Site- A Success Story?” September 2001.

⁸⁷ From the US EPA Record of Decision Document. 1996.

toluene, and arsenic. The Industri-Plex site was added to the NPL in 1983. By that time it was identified that 110 acres of the 245-acre site contained contaminated soils that required remediation; and 60 acres, some of which required remediation, were in active use for commercial and industrial businesses.

The ROD for the site was completed in 1986. EPA chose a remedy which included capping approximately 110 acres of contamination with protective covers. A cap helps to limit potential for direct contact, minimize the effects of the freeze-thaw cycle, and help control exposure resulting from erosion. This remedy was determined to be more cost effective and is only slightly less protective to human health than complete soil removal. In addition, this remedy met acceptable engineering practices which take into account the consequences of contaminants and odors released into the air, the general spreading of contamination when soil is removed, and the potential damage to wetlands during excavation activities. This remedy requires monitoring of the ground water quality and system maintenance. A capped area of a superfund site requires control measures to prevent future uses that will damage its integrity and risk human exposure to the contamination. These control measures, known as "institutional controls," are legal restrictions on property use to limit the nature of activities that may take place.

The ROD required that permeable caps be placed where lead, arsenic, and chromium soil levels were over 300 ppm, 600 ppm, and 1000 ppm respectively. The ROD also stipulated that if the land is redeveloped, a concrete layer or parking lot may be used to fulfill part of the cap requirement over that particular area. The purpose of permeable caps is to prevent physical contact with the contamination. An impermeable cap and a gas collection and treatment system were to be constructed to deal with the animal hide piles. The permeable cap keeps water from coming in contact with the hides, and the gas collection system is meant to collect and contain hydrogen sulfide gases which can be produced underneath the cap.

The ROD recommended that a groundwater interception / recovery system be placed at the leading edge of the groundwater contamination plume and that there be additional treatment of surface water discharge. An interim groundwater treatment system was constructed at areas with high concentrations of toluene and benzene in order to reduce groundwater contamination migration and to treat the contamination hot spots. The ROD also required that additional groundwater, surface water, and soil assessment activities be conducted under a Groundwater and Surface Water Investigation Plan.

EPA entered into a Consent Decree in 1989 with 24 PRPs. The PRPs agreed to pay EPA for past and future oversight costs of remediation and to create a Remedial Trust responsible for funding the construction and maintenance of the remedy. Clean up activities were to be performed as a PRP-lead with EPA oversight under a Remedial Trust.

Also, as part of the settlement agreement with EPA, the MA DEP and the other PRPs, MPT transferred title of its remaining 120 acres to a "Custodial Trust." At the time of the settlement, none of the PRPs were willing to hold title to this land. The Industri-Plex Custodial Trust's responsibilities were to own, manage, and market most of the undeveloped property on the site. The Trust was given the power to subdivide the property as appropriate, locate purchasers for the property, negotiate the terms of the sale or transfer the property, and sell and convey the property

in coordination with the remedial activities. The sale proceeds were used for the beneficiaries, the City of Woburn, the EPA, the DEP, and the PRPs, for clean up and oversight costs and to develop institutional controls. Additionally, the Trust is responsible for setting up a long-term custodial fund for any unsellable property. The Trust was designed to terminate when all of the property is sold and distributed.⁸⁸

Reuse Process^{89,90}

The Custodial Trust was primarily tasked with marketing the site for private redevelopment. The redevelopment planning efforts were conducted during the remedial design phase of clean up rather than waiting until the remediation was complete. The Custodial Trust began the reuse process by first reaching out to the stakeholders individually and through focused meetings and public forums in order to get their involvement. The priorities of the beneficiaries were distinct but interdependent. The city wanted a redevelopment plan that would create new jobs, return the site to the tax rolls, and help resolve some major quality-of-life issues. The EPA wanted to determine and ensure that the clean up methodologies would be protective and widely supported by the community. The PRPs sought an acceptable return on their investment in the Custodial Trust and a redevelopment plan that would manage and/or mitigate their long-term liability. The community group For a Cleaner Environment (FACE), which was formalized in 1980, was primarily concerned about the public health implication of the clean up and redevelopment.

As the stakeholders began to communicate, the Woburn community began to embrace the notion that it could and should have the most to say about any future use of the site. The City of Woburn, weary from the scares of dealing with the consequences of contaminated sites, eventually became an ally and partner in the redevelopment process. The Custodial Trust helped integrate the concerns of everyone involved and served as an advocate for redevelopment.

The Custodial Trust conducted a market analysis feasibility study to determine the "highest and best use" for the site and identify needed infrastructure improvements. The Trust concluded, among other things, that the site was prime for commercial and industrial redevelopment. Yet there were two major barriers to redevelopment. First, off site access would need significant improvements; and second, public-private partnerships would need to be formed in order for the deal to be financially pragmatic. They reviewed their findings with the project stakeholders--the city, EPA, DEP, and the PRPs--and secured their endorsement.

The first breakthrough came after EPA published a draft proposal for a PPA in late 1994. The Vining Company approached EPA with a request for a PPA as part of the purchase of a three-acre parcel on the site. In 1996, they purchased the parcel for \$775,000. That purchase was the first of a continuing series of redevelopment activities at the Industri-Plex site.

At the same time the Massachusetts Bay Transportation Authority (MBTA) was looking for areas along the Route 128 corridor, accessible to mass transit, to place satellite parking as

⁸⁸ "Industri-Plex Superfund Site- A Success Story?" 2001.

⁸⁹ "Industri-Plex Custodial Trust Brings Superfund Site Back to Life." 1999.

⁹⁰ "Superfund Redevelopment Initiative Finance Case Study Series Industri-Plex, Woburn, Massachusetts" April 1999.

mitigation for the “big-dig” central artery project. The MBTA came together with the Massachusetts Port Authority and the Massachusetts Highway Department in 1997 and entered into EPA’s second PPA for the site to create a regional transportation center. The Remedial Trust, with assistance from the Custodial Trust and EPA approval, negotiated an agreement with the three state transportation agencies to allow a remedial design upgrade for the construction. An alternative protective cover was planned with an average thickness of 48 inches instead of the originally planned protective cover of 16 inches. This was necessary to allow future excavations without coming into contact with contaminated soil. The state contributed \$30 million to construct this infrastructure improvement. The Remedial Trust and EPA agreed to modify and delay the remediation schedule to accommodate the design and construction of this alternative cover. The three transportation agencies took title to 40 acres for the regional transportation center along the rail lines. Completed in 2001, this multi-modal transportation facility provides service for the commuter rail, park and ride bus, and airport shuttle.

EPA entered into a third PPA in 1998 with Dayton Hudson Corporation in connection with its purchase of 30 acres for a retail shopping center. Dayton-Hudson self-financed the \$11.5 million purchase price. About 19 acres of this land were buildable.

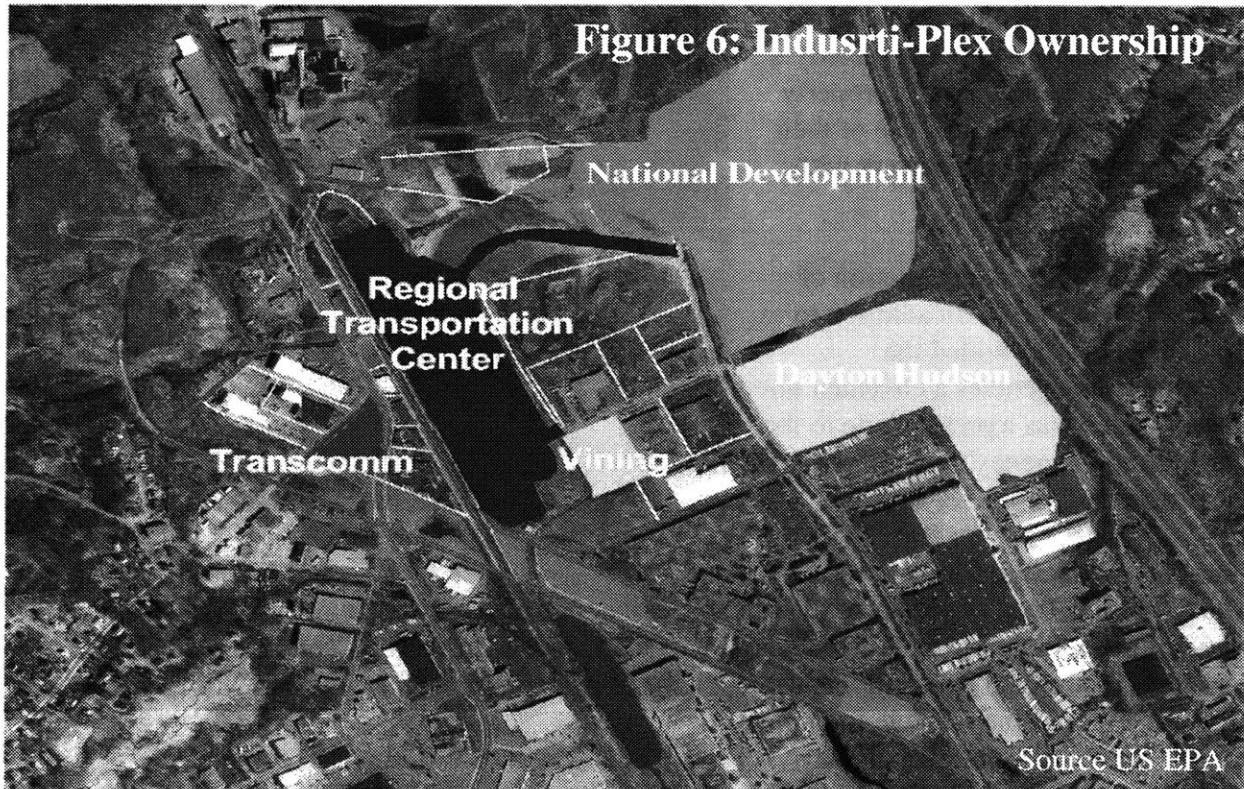
National Development of New England (NDNE) was interested in the development of an office park on a 50-acre portion of the site. NDNE partners self-financed \$2.5 million for 20 of the 50 acres, though they would have preferred a traditional financing arrangement with a secure bank loan. In 1999, EPA signed a fourth PPA with NDNE. Prior to receiving the PPA, Fleet Blank was reluctant to offer a loan, even though the bank was not in the chain of title. Once the PPA was approved, Fleet provided a \$2.5 million post-closing loan to the partners to allow them to recoup their purchase price. The most important factors that persuaded Fleet to issue the loan included the existence of liability-limiting mechanisms such as the PPA, which includes a covenant not to sue. Later in 1999, NDNE closed on the remaining 30 acres with a \$2.1 million purchase price financed with a conventional land loan from another local Boston bank. A condition of the purchase agreement was that NDNE convey some of the land to the city for right-of-way and road construction, leaving an estimated 8 to 10 acres of the parcel available for the proposed office park and hotel complex.

In early 2000, EPA entered into a fifth PPA with a school bus transportation company in connection with its purchase of a 2-acre parcel for approximately \$1.2 million.

These commitments of investment assisted the city in acquiring a \$3.1 million economic grant from the Commonwealth of Massachusetts to extend Commerce Way through the site and to improve the public roads surrounding the site. The city also supported the developers' permitting process and rezoned a portion of the site for retail use. The Custodial Trust assisted the city in the preparation of these grants and rezoning the site.

Plans for a new interchange off Interstate 93 onto the Industri-Plex site were originally proposed in the 1970s by the Massachusetts Department of Transportation (Mass DOT) and dropped when the site was listed on the NPL. The goal at the time was to alleviate traffic congestion in the area, in particular at the I-93/Route 128 cloverleaf interchange. The City of Woburn, together with the trust and other stakeholders, decided to approach state legislators to negotiate a

partnership with the Massachusetts Highway Department to reconsider this option. The parties came together with assistance from the Custodial Trust and structured a Memorandum of Understanding. Under this MOU, the Remedial Trust provided funding for the engineering design of the I-93 Interchange in exchange for the Highway Department's expeditious construction of the interchange. The acquisition of the 10 acres for the new I-93 interchange did not involve a PPA. The Massachusetts Highway Department acquired the property through eminent domain, which exempts them for liability.



Integrating Remedy and Reuse (EPA's Role)⁹¹

EPA (along with the MA DEP) provided oversight of the remediation and redevelopment and were flexible in allowing modifications to remedy designs and construction schedules to accommodate redevelopment. The agencies also worked closely with the various stakeholders and their contractors to address Superfund liability, evaluate the potential impacts of design and construction activities on the remedy, and help develop acceptable workplans and health and safety plans. These efforts facilitated the timely completion of construction. EPA also served as a neutral entity to help resolve occasional disputes among parties.

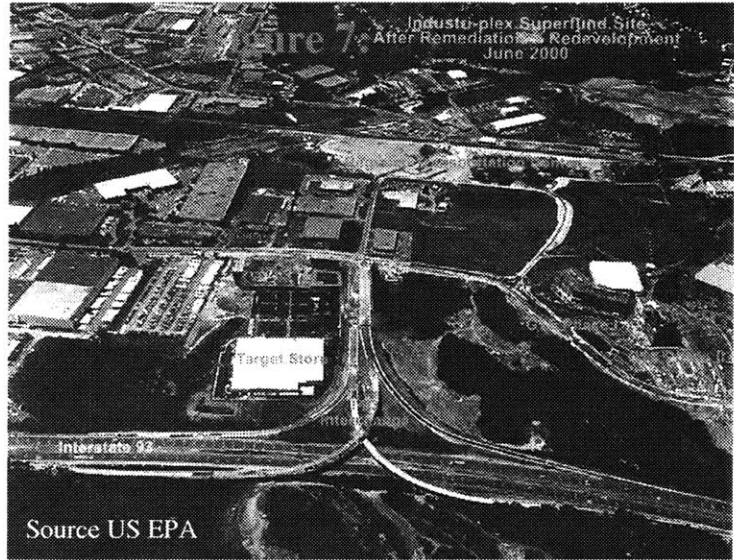
The Consent Decree established redevelopment as an explicit goal in addition to the EPA's remediation goal to protect human health and the environment. Stakeholders including EPA, and the MA DEP recognized that not only were there existing businesses operating on the site, but

⁹¹ "Superfund Redevelopment Initiative Finance Case Study Series Industri-Plex, Woburn, Massachusetts" April 1999.

that more than 120 acres of undeveloped land on the site. Also, the community and local businesses wanted development to occur after remediation. As a result, EPA and MA DEP permitted the Remedial Trust to choose among a number of alternative protective covers, each of which provided adequate protection for people and the environment. This flexibility allowed the parties to maximize the redevelopment potential of each parcel of the property.

The Consent Decree also provided a framework for innovative institutional controls. These institutional controls were designed to ensure the remedy's integrity while allowing the property owners the most practical use of their property and still be consistent with the remedy.

The EPA completed remediation of the site in May 1998. In addition to the above, EPA provided the transportation agencies a covenant not to sue, which was a prerequisite to the transportation agency's purchase of the property.

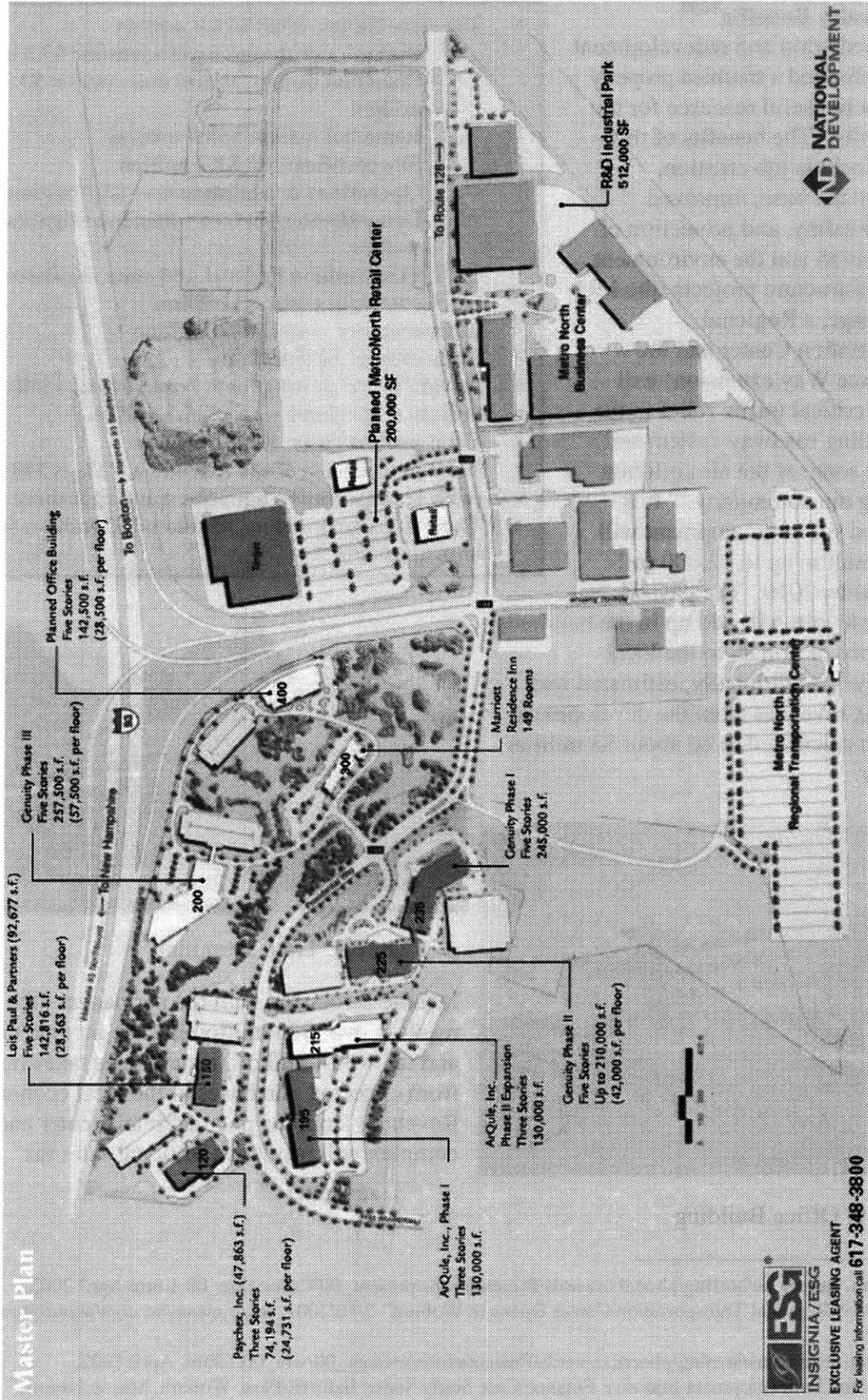


Final Reuse Design Plans

The Custodial Trust coordinated the sale of the five parcels, and the Remedial Trust changed the name of the complex from Industri-Plex 128 to MetroNorth Corporate Center. Reuse Goals primarily focused on economic redevelopment. When complete, the complex will include:

- New I-93 Interchange (complete)
- Extended Commercial Way via Presidential way into Wilmington (complete)
- Side Walks throughout development (complete)
- Walking trails
- 200,000 square foot Retail Center (Target retail store complete; others pending)
- 512,000 square foot R&D Industrial Park (pending)
- 1.3 million square foot Commercial Office Park with parking garages (80% complete)
- 150-room hotel (under construction)
- Regional Transportation Center (complete)
 - access to commuter rail, park and ride bus, and airport shuttle
 - 2400 parking spaces

Figure 8:



Community Benefits^{92,93}

The remediation and redevelopment has transformed a troubled property into a more useful resource for the community. The benefits of this project include job creation, increased tax base, improved roadway safety, and protection of public health and the environment. The infrastructure projects (the I-93 Interchange, a Regional Transportation Center and the Commerce Way extension) will provide critical traffic relief in the surrounding roadway system and mitigate some of the air pollution affecting the community.⁹⁴ It is estimated site redevelopment will likely result in up to 12,000 full-time jobs by 2010. The payroll from these jobs will add up in the hundreds of millions of dollars to the local economy.⁹⁵ Additionally, estimated real estate tax revenues from the development has been calculated to be about \$3 million annually.



Figure 10: Office Building

- **Site remediation total: \$74.8 million**
 - Preliminary design investigations: \$3.3 million
 - Remedial design studies and results: \$3.3 million
 - Remedial action: \$50.0 million
 - Site certification: \$2.2 million
 - Operations & Maintenance: \$2.1 million
 - Groundwater/surface water investigations and studies
 - \$11.4 million Federal and state regulatory oversight costs: \$3 million
- **Infrastructure costs: \$47.1 million**
- **Costs of sale: \$4.9 million**
- **Private sector development costs: \$166.1 million**
- **Private sector land costs: \$16.2 million**
- **Total project costs: \$309.1 million**
- **Total project cost of the Anderson RTC is \$10 million (with transportation agencies splitting it three ways)**
- **The MBTA invested an additional \$7 million for track improvements**



Figure 9: Train Terminal⁹³

Income associated with the permanent jobs will result in over \$26 million in state income taxes and up to \$14 million in state sales taxes resulting from expected purchases in the local economy. Revenues from the planned retail center and hotel complex will result in additional sales tax revenues.⁹⁶

⁹² www.dep.state.pa.us/hosting/phoenixawards/Presentations/present_00/Cases/case_00.1.htm April 2002.

⁹³ "Anderson Regional Transportation Center Opens in Woburn" 5/16/2001, www.massport.com/about/press01/ April 2002.

⁹⁴ www.dep.state.pa.us/hosting/phoenixawards/Presentations/present_00/win_00.1.htm. April 2002.

⁹⁵ "Superfund Redevelopment Initiative Finance Case Study Series Industri-Plex, Woburn, Massachusetts." 1999.

⁹⁶ Ibid.

The development is expected to have positive effects on the values of other commercial properties, as well as residential properties, in the area. There has already been significant redevelopment in the surrounding area, including an anticipated 345,000 to one million square feet of office and light manufacturing space immediately to the north and west of the site, 170,000 square feet of retail space to the south, and 850,000 square feet of office space to the east.

Cynthia Brooks, the Trustee for the Custodial trust, wrote:

“Once called by former six-term Mayor John Rabbitt as ‘the albatross of the Woburn,’ today, Industri-plex represents this community's economic future. It has become a vital source of pride, renewal and hope. Industri-plex is not about forgetting the past, for the people of Woburn will never forget the legacy associated with the Wells G&H Superfund Site.

... Their determination may be best symbolized by recent state legislation naming the RTC the centerpiece of this redevelopment after Jimmy Anderson, the son of Anne Anderson, who died of leukemia in 1981. Industri-plex provides a long-sought vehicle for helping to write the next chapter in Woburn's history. Industri-plex today is the result of unprecedented collaboration and cooperation between the public and private sectors and all three levels of government. It is a rare superfund success story about the commitment, competence, perseverance and hope of many individuals and organizations that dared to dream the impossible and then worked together for more than a decade to make that dream a reality.”⁹⁷

This clean up and redevelopment will also have improved the visual appeal of the local landscape and contributed to an increase in civic pride.⁹⁸ This project has helped to attract millions of dollars in private sector investment into the redevelopment and, more importantly, will help heal a community by a commitment to overcome the stigma of Woburn's past and by providing an environmentally safe place to work. Additionally the site will provided some enhanced quality of life and a source of renewed hope.

⁹⁷ www.dep.state.pa.us/hosting/phoenixawards/Presentations/present_00/win_00.1.htm

The Industri-plex Superfund Site. April 2002.

⁹⁸ “Superfund Redevelopment Initiative Finance Case Study Series Industri-Plex, Woburn, Massachusetts.” 1999

Reuse Process Strengths

- Up front trust building/ consensus building
- Stakeholder group includes business, EPA MA DEP, other state agencies, local government, and some community members.
- Formed public-private partnership
- Goal oriented process
- Redevelopment theme established - MetroNorth Corporate Center

Design Strengths

Land Use

- Limited mixed use– office and R&D park with retail and hotel
- Parking structures incorporated into design, limit impervious surfaces
- Building densities are higher than surrounding uses
- Take advantage of existing assets with nearby office parks and employment pool
- Strengthen and encourage growth in existing areas
- Flexible, can accommodate higher densities in future
- Design incorporates street lights, sidewalks, and stone walls
- Contextual design of train station

Transportation

- Site design includes access to mass transit
- Variety of transportation choices – multimodal station
- Walkable (sidewalks integrated throughout)

Environment

- Protect natural resources- wetland restoration and enhancements
- Design feature sensitive to wildlife habitat
- Planned open spaces
- Design works around environmental contaminated areas

Implementation

- Plan was implemented in a expedient manner because the projects was driven by market demand and urgent needs of the Massachusetts state transportation agencies
- Reuse construction schedule coordinated with remediation schedule
- Funding form public-private partnership

Programming

- Overall image enhancement for city
- Development decisions predictable, fair, and cost effective
- Train station named after local resident

Reuse Process Critique

- Driven by economic development due to primary mission of Custodial Trust to recoup remediation costs
- “community” representation was primarily local politician and government representatives -limited neighborhood representation
- Does not look at regional growth needs

Design Compromises and Weaknesses

Land Use

- Another “everywhere community” with a train station
- No housing was considered for the area because of the high land value
- Low density retail, car dependent retail.
- Not mixed land uses (restaurant taken out of mix)

Transportation

- TOD principles **NOT** incorporated
- The area is relatively walkable yet there are still large parking lots scattered throughout and not internal bus system
- No direct train access from east of side of tracks

Environment

- Does not have a good solution to address future uses and understanding of capped hide piles

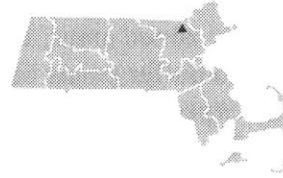
Implementation

- Custodial Trust leadership will phase out
- No accountability into future

Programming

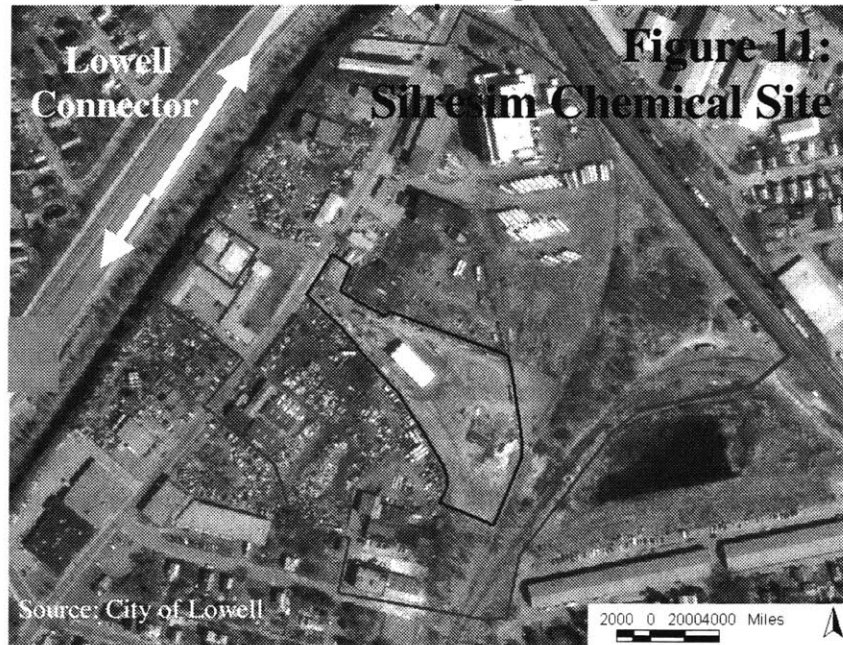
- Does not preserve community character
- Does not promote distinctive attractive communities with a strong sense of place
- Minimal reference to the past

CASE II: SLIRESIM, LOWELL, MASSACHUSETTS⁹⁹



Site History

From 1916 through 1971 the seven-acre site located at 86 Tanner Street in Lowell, Massachusetts, operated as an oil and fuel storage depot. Mr. John Miserlis, a Lowell University Chemistry Professor, purchased the property in 1971 to run the Silresim Chemical Corporation (SCC) as a chemical waste reclamation and disposal facility. SCC received thousands of gallons of waste materials from facilities all over New England. The Massachusetts Department of Water Pollution Control (DWPC is now MA DEP) granted a hazardous waste collection and disposal permit to the corporation in 1973. Yet between 1973 and 1976, SCC was cited for various permit violations due to the volume of on-site waste storage at the facility. DWPC initiated actions to close the facility in July 1977. The SCC declared bankruptcy in December 1977 and abandoned the site and future clean up of the property. The DWPC conducted an emergency response from 1978 to 1982 and subsequently fenced the property and removed 30,000 drums of waste.



The property is currently owned by the defunct Silresim Chemical Corporation, also a PRP. The head of the Silresim Chemical Corporation, Mr. John Miserlis, recently died. No interest in redevelopment of former SCC parcel had been expressed in part due to the significant level of

Figure 11: Silresim Chemical Site



contamination and clean up, but more significantly due to the configuration of the EPA installed cap and groundwater extraction system. The parcels that compose the SCC property have been in tax title foreclosure since 1977. Over \$470,000 in property tax payments are due to the City on this property. There are an additional 22 properties on the Site of which three of these parcels were in tax arrears and six were significantly underutilized.

⁹⁹ "City of Lowell Superfund Redevelopment Pilot Workplan." 2000.

Residentially zoned areas, known as the Sacred Heart neighborhood, lie on both sides of the street and no buffer exists between them. Many of the residents' concerns directly stem from their poor experience with the Silresim Chemical Corporation and the numerous environmental problems that they created.

EPA Remedial Activities

The EPA investigated the site and identified 132 chemicals in the groundwater and surficial and subsurface soils. The Silresim Superfund Site was officially listed on the NPL on December 20, 1982. The Silresim Site is geographically defined by the extent of contamination as sixteen acres of groundwater contamination and seven acres of soil contamination. The Silresim Site includes the former 4.5-acre SCC property and 22 surrounding parcels. From 1983 to 1984, the EPA demolished the buildings, removed above-ground storage tanks, and installed a cap consisting of 9 inches of gravel and 14 inches of clay. Crushed stone was placed on additional surficial soil contamination in 1984 and 1986, and the perimeter fence was also extended to enclose these areas.

The ROD for the Silresim Site was signed in 1991. The selected remedy includes the management of migration (MOM) and source control. The major MOM remedial actions completed include the installation of a groundwater extraction system and the construction of the groundwater treatment plant brought on line in November 1995. Yet recent studies show that an extension of this groundwater extraction system may be required in the future. The current source control remedial actions include a pilot test of a soil heating system to drive out contaminate for collection. If this proves to be successful, a full-scale treatment will be employed on the site.¹⁰⁰ Additional source control actions will include excavation and stabilization of contaminated soils throughout the site, back-filling of the SCC property with treated soils, and upgrading the current cap to conform with current landfill regulations.

Reuse Process

The city applied and was awarded an EPA SRI grant in July of 2000 to conduct planning with local businesses and stakeholders, including local neighborhood groups, regarding the future reuse of the individual parcels that make up the Site¹⁰¹. A coherent visioning process would allow stakeholders with different outlooks regarding the reuse of the Silresim Site to work out their differences, and would define a reasonable course of action for the City to follow. The City of Lowell and subsequently hired a consult, Stoss Landscape Urbanism consulting group out of Cambridge MA.

Following the SRI award, the city was contacted by EPA to solicit interest in receiving additional contractual support to initiate a redevelopment process that incorporates the reuse of the Superfund Site, as well as the other Brownfields with which it is co-located. The City agreed and was also awarded facilitation services by EPA through a separate contract to Vesar Consultant Group out of Arlington, Virginia.

¹⁰⁰ Interview with EPA Project Manager Chet Janowski.

¹⁰¹ The stakeholders were interested in a comprehensive plan for all of Tanner Street yet the SRI Grant only allows for reuse planning in the site boundaries. The City applied for EPA fund to address the Silresim site with hopes of finding additional funds to expand the planning area.

The city constructed a workplan under SRI grant with the following goals:

1. Form a community advisory board (CAB) composed of interested stakeholders to oversee the creation of a redevelopment plan for the Site.
2. Conduct a 12-month planning and consensus-building process through the community advisory board that will result in the creation of redevelopment options for the Silresim Site and work toward a resolution of the environmental justice issues.
3. Hold two or three public meetings with the community.
4. Create a Silresim Development Council that will monitor the long-term redevelopment of the site and oversee the implementation of the Silresim Site redevelopment plan.
5. Lay the building blocks for the land use study of the entire Sacred Heart and Tanner Street neighborhood as part of the broader strategy for the city to redevelop the area.

At the end of January 2001 Vesar Group conducted interviews with a number of Tanner Street stakeholders to assess community concerns and to assist the city in determining membership on the CAB. Vesar interviewed several people including: city officials, industrial property owners on Tanner Street, MassDevelopment, residential neighborhood activists including representatives neighboring of the Sacred Heart Neighborhood Association, and other community leaders. Vesar developed and provide a fact sheet on the project to communicate to the interviewees what the project is about. The interviews revealed that interviewees agreed that the future use of the Tanner Street area should be industrial. However, analysis of the interviews suggested that there are different visions of what that industrial use should look like. While there was no one vision offered by those who were interviewed, most of the redevelopment visions were not inherently contradictory. Some specific future use goals discussed included:¹⁰²

- Development of an industrial park
- Acceptance of virtually any industry
- Addition of some amenities such as sidewalks, green space, and commercial areas (e.g. restaurants).
- Simple sprucing up of the existing properties
- Attracting high technology into the Lowell area
- Greater commercial development

The interviewed groups also expressed concerns about three other overarching issues:

- Lack of Federal, State or local funding to support renewal efforts of any magnitude.
- Poor understanding on the part of almost everyone interviewed as to the current status of the Silresim Superfund site, and corresponding poor understanding of the physical constraints on building on the site.
- Availability of private funds for real estate development and purchase on Tanner Street.

Vesar also conducted four focused interviews with key stakeholder group in Lowell. The four groups were city councilors and civil servants, financial lenders and insurance providers, community and environmental groups, and business leaders. The different interests represented shared some similar visions for the Tanner Street Industrial Corridor, but there were divergent views as well. In general, individuals in most of the focus groups agreed that the street should be put to mixed uses in the future including both industrial and commercial uses. The general consensus was that the future uses should be cleaner than the current uses. However, City

¹⁰² Vesar January '01 Trip Report "Lowell, Massachusetts Facilitation Project"

Councilors suggested that existing businesses should stay and clean up their appearances, business leaders and community groups thought that existing businesses should be brought up to current environmental and safety standards, and bank representatives thought that entirely new businesses including light industry, research and development, and office space should be pursued. Consideration for job creation was a concern of the community and environmental groups representatives, business leaders, and bankers. Most thought that contamination and liability issues would need to be addressed up front for the street as a whole. In general, most participants agreed that while a lengthy planning and implementation process is inevitable, short term objectives and successes would be critical to achieving momentum and support.¹⁰³

Additionally Vesar attended a meeting of the Sacred Heart Neighborhood Improvement Group (SHNIG) to try and obtain additional input from local residents living near Tanner Street and the Silresim Superfund site. Representatives of the SHNIG indicated that they would like to see improvements made and amenities added to the street. Specific suggestions included adding lighting and sidewalks, and cleaning up the brook.

The CAB convened seven times from April 2001 to January 2002. Vesar conducted the first three meeting and then they were taken over by Stoss. The CAB was made up of a wide range of community interests and included residents of the Sacred Heart neighborhood, owners or representatives of businesses on Tanner Street, a bank representative, a representative of the MA DEP, EPA, ACOE, and representatives of city agencies. The purpose of the meeting was to convene a committee that will provide input to the city on the future of Tanner Street.¹⁰⁴ Additionally, two public meeting were held to provide information and allow for a broader community input.

The CAB identified the following long-term goals for the reuse plan:¹⁰⁵

- Minimize adverse impact to neighboring residential and commercial districts
- Optimize visual and ecological resources to establish new image/identity
- Create an environment that stimulates reinvestment by existing business and property owners and new investment of clean leading-edge industries
- Optimize use of existing infrastructure
- Optimize short-term economic opportunities while implementing a long-term vision
- Enhance long-term financial prospects of community
- Recognize competition for limited resources, for both funding and a quality workforce
- Recognize that ongoing retraining and occupational upgrading is a requirement of tomorrow's competitive community workforce
- Strive to maintain financial self-sufficiency for district redevelopment and revitalization plans

One key factor identified during the planning process was that the site would have to undergo a long-term clean up and permanent reuse would not be available for 10-20 years. Recognizing the limitations in predicting the real estate market for that length of time, the CAB agreed to

¹⁰³ Vesar Report "Tanner Street Industrial Corridor Focus Group Trip Report October 1-3, 2001"

¹⁰⁴ Vesar Trip Report "Lowell, Massachusetts: Facilitation Project Initial Convening of Community Advisory Board." April 17, 2001

¹⁰⁵ Stoss Power Point presentation to CBA on January 23, 2002.

develop an interim use for the immediate Silreim property. The CAB had agreed on a study theme “The Working Landscape: Remediation in Process” for this parcel. (See Figure13)

Integrating Remedy and Reuse (EPA’s Role)

EPA and ACOE worked closely with the CAB and Stoss to identify reuse opportunities and constraints relative to the environmental clean up at the site. The CAB was briefed on the existing contamination issues and the ROD goals. Near term reuse challenges were identified. Any interim site use would have to accommodate the soil heating pilot study, above ground piping and equipment, and the on site ground water treatment plant. The interim use would also have to incorporate a storm water management system, limit moisture to the existing cap, and allow for EPA and ACOE access. An interim use would allow the site to serve as an education resource by providing access to view site clean up operations. Also new technologies such as the use of a vegetative cover to clean up the site could be incorporated. The EPA has committed to continue to work with stakeholder as the reuse plan and remediation decisions move forward.

Proposed Reuse Design Plan¹⁰⁶

Stoss presented the redevelopment goals, including both short-term and long-term solutions, to the community on January 23, 2002. The plan features include:

- Creating zones for heavy industrial, commercial/ light industrial, commercial office, open space, and green technology demonstration
- Improving access and circulation to the site by enhancing traffic patterns and introducing new roads to increase density
- Improve image by building interim screens along the highway which abuts the site to enhance the visual gateway into the city
- Open Space
 - Greening of the brook and opening up access
 - Turning the Silresim Property into a “Park Eco-Tech”
 - Converting nearby commercial buildings into a recreational park

Community Benefits¹⁰⁷

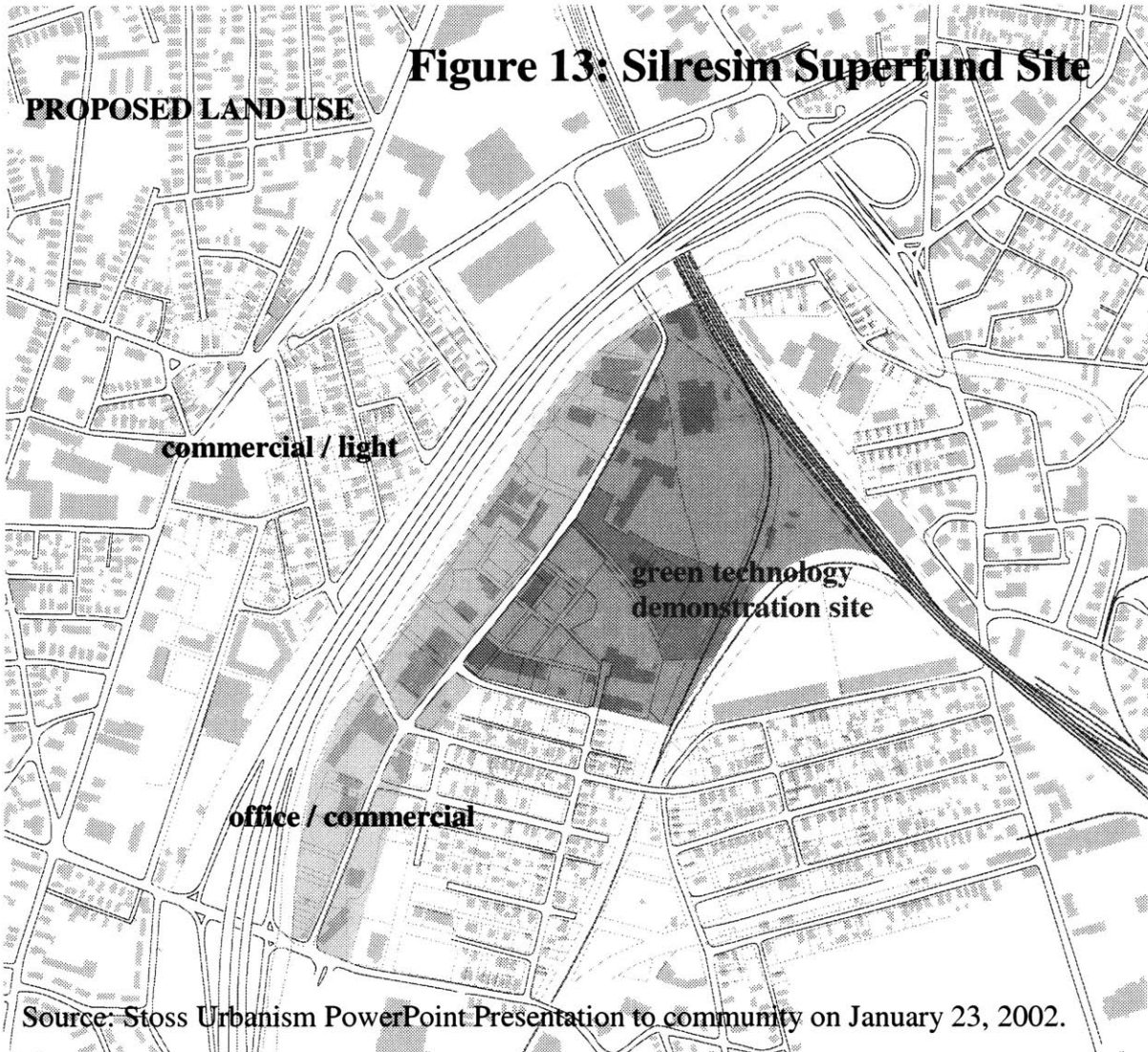
The design will allow for the creation of several new jobs and taxes for the city, as well as provide connection with the area neighborhoods and create open space. It will also allow for site reuse during remediation.

¹⁰⁶ Community goals summaries as derived by Stoss, landscape urbansim consulting firm hired by the City of Lowell under the Superfund Redevelopment Initiative Pilot.

¹⁰⁷ Community goals summaries as derived by Stoss, landscape urbansim consulting firm hired by the City of Lowell under the Superfund Redevelopment Initiative Pilot.

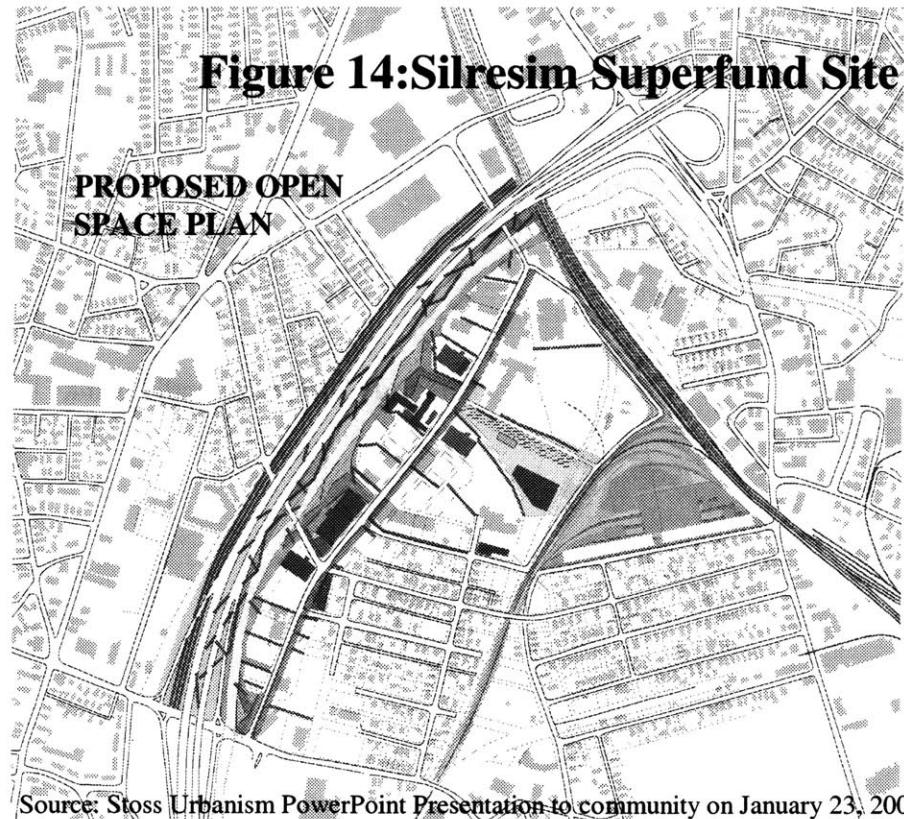
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Figure 13: Silresim Superfund Site



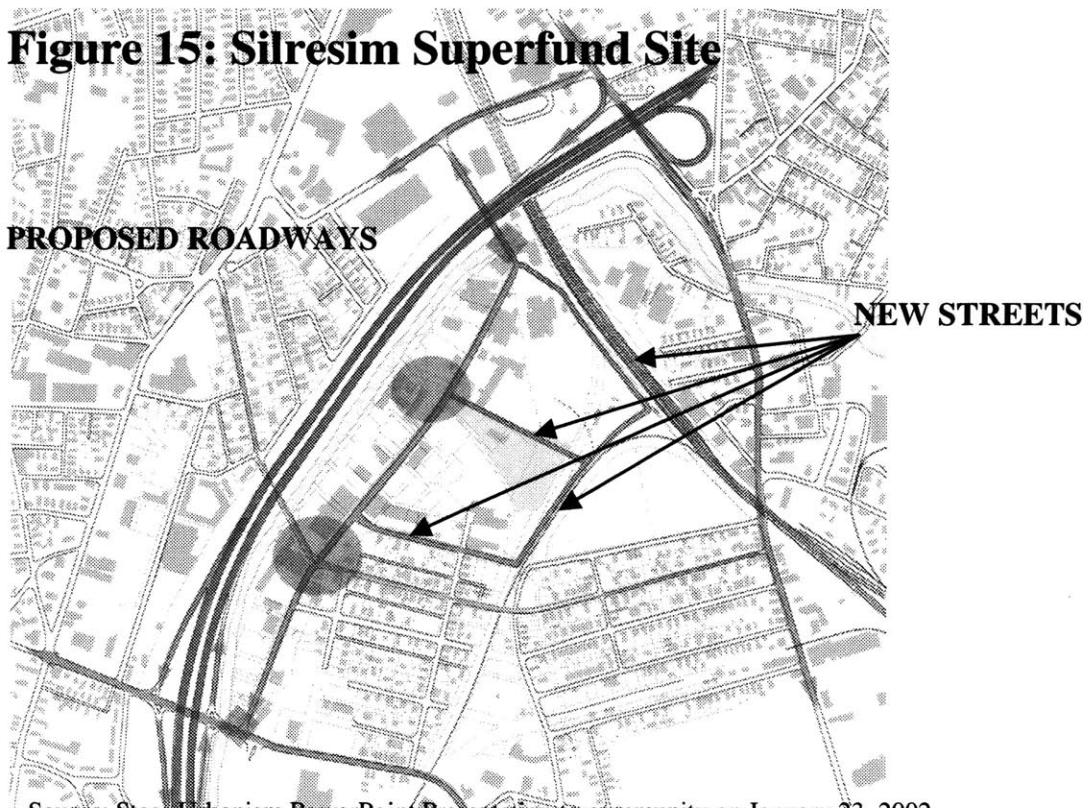
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Figure 14: Silresim Superfund Site



Source: Stoss Urbanism PowerPoint Presentation to community on January 23, 2002.

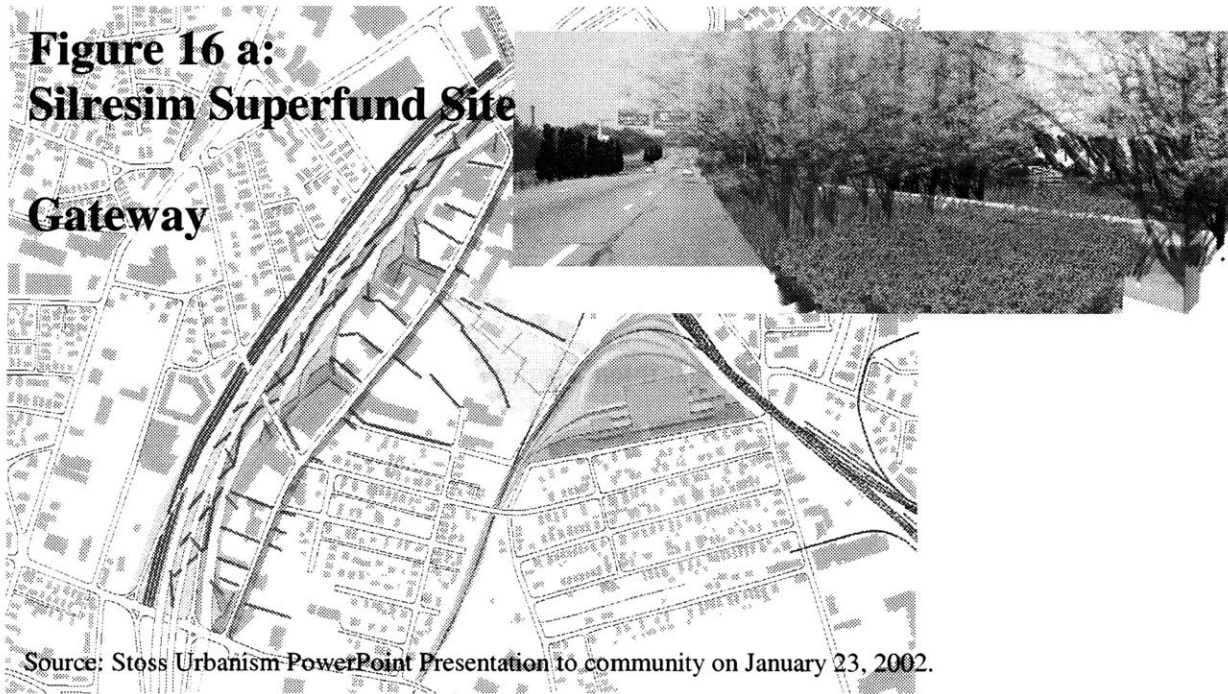
Figure 15: Silresim Superfund Site



Source: Stoss Urbanism PowerPoint Presentation to community on January 23, 2002.

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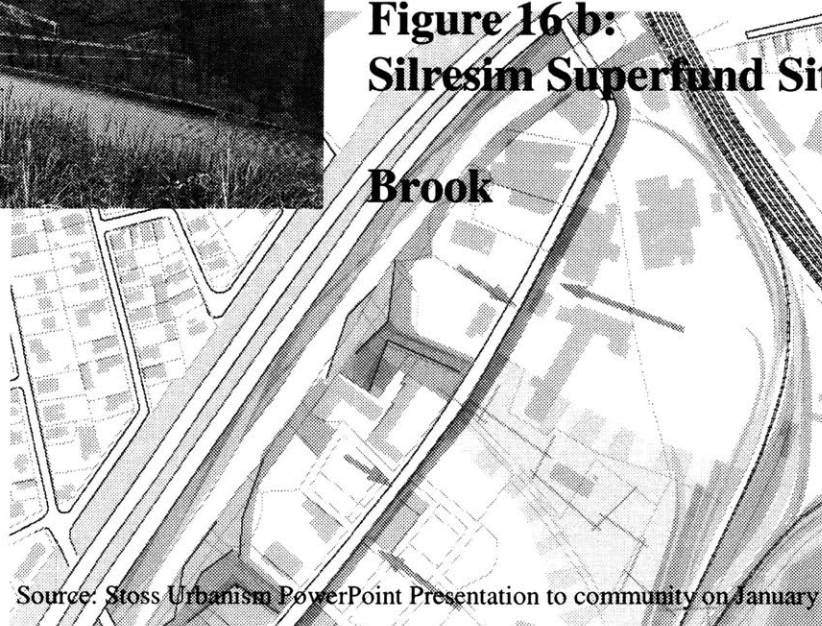
**Figure 16 a:
Silresim Superfund Site
Gateway**



Source: Stoss Urbanism PowerPoint Presentation to community on January 23, 2002.

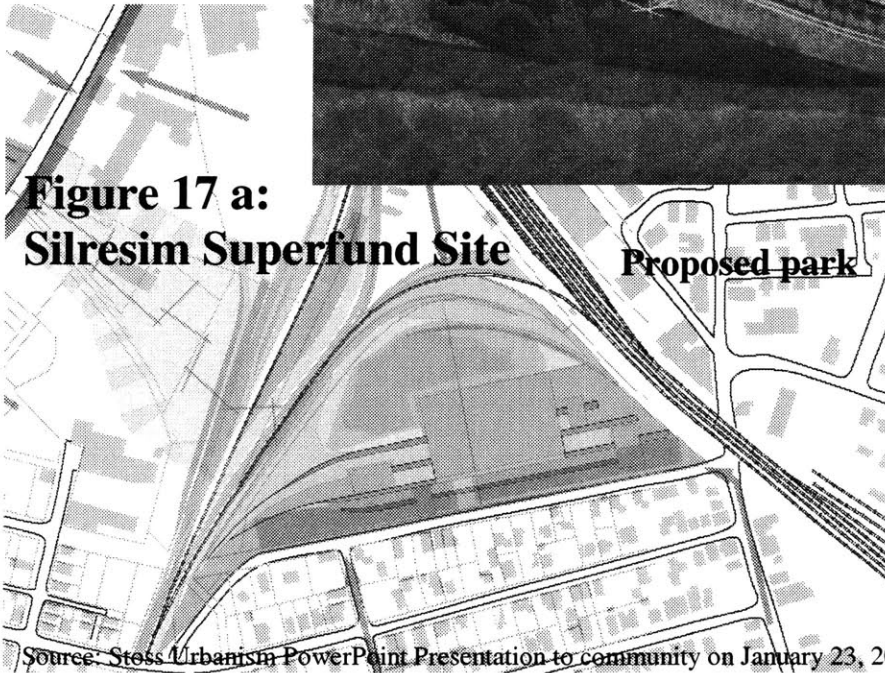
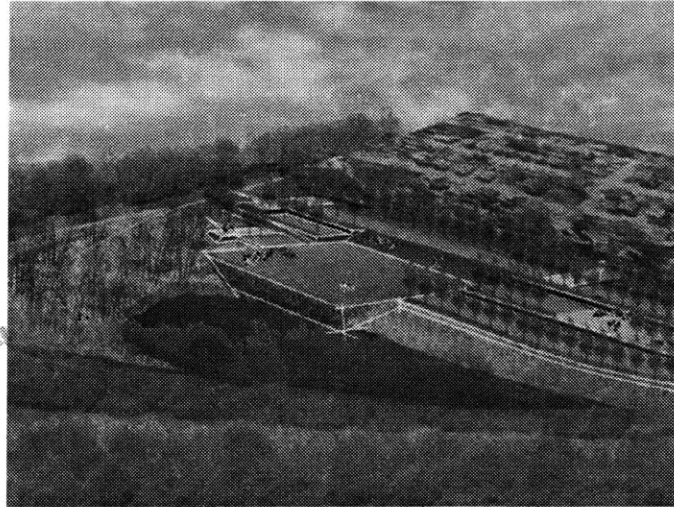


**Figure 16 b:
Silresim Superfund Site
Brook**



Source: Stoss Urbanism PowerPoint Presentation to community on January 23, 2002.

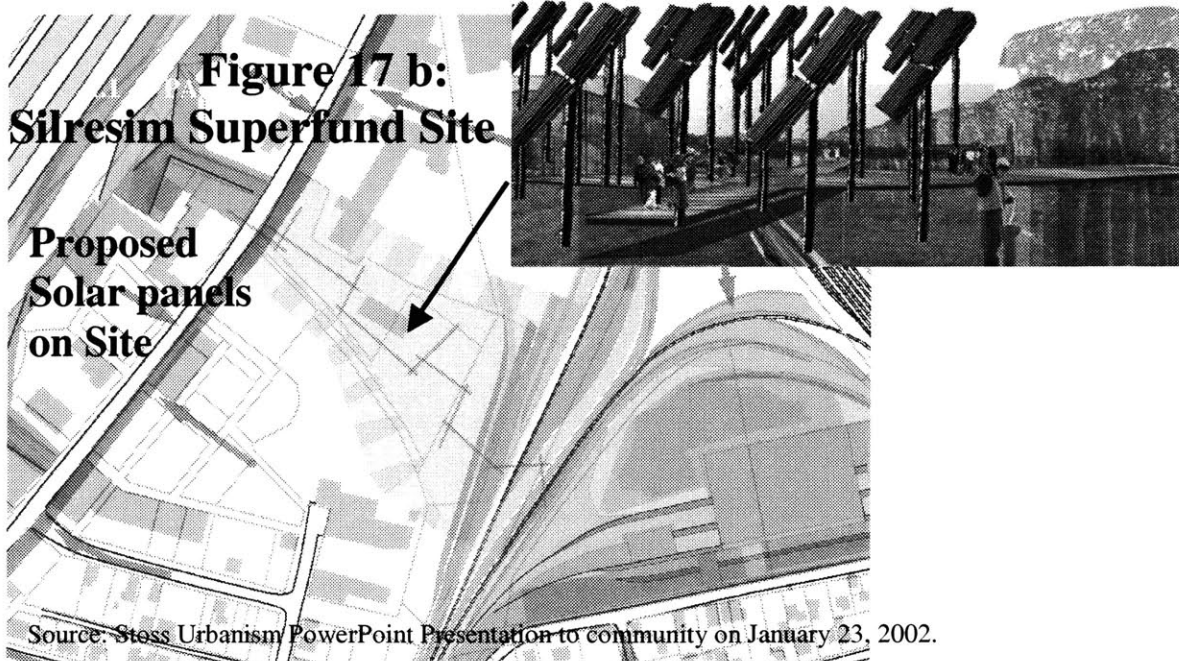
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**Figure 17 a:
Silresim Superfund Site**

Proposed park

Source: Stoss Urbanism PowerPoint Presentation to community on January 23, 2002.



**Figure 17 b:
Silresim Superfund Site**

**Proposed
Solar panels
on Site**

Source: Stoss Urbanism PowerPoint Presentation to community on January 23, 2002.

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Reuse Process Strengths

- Diverse stakeholder representation
- Regularly scheduled stakeholder meetings
- Consultant provided imagery for design development
- Developed list of tools to help implement short and long-term initiatives.
- Design optimizes benefits and opportunities for existing landowners.
- Design is flexible

Design Strengths

Land Use

- Heavier industrial reserved in region of existing compatible use.
- Residential buffered from heavier industrial by park, light industrial and office land use.
- Includes scheme for street beautification.

Transportation

- Industrial access limited to existing industrial transportation corridor to minimize impact on neighboring residential.
- Increased access proposed to interior parcels by adding a streets
- Maintain rail access.

Environment

- Maximize opportunities to enhance existing natural environmental
- Minimize adverse impact of redevelopment on existing non-industrial land uses.

Implementation

- Establish City as oversight agency/department.
- Create framework for negotiating land deals and swaps and relocations.
- Create community coordinating committee to represent Tanner Street issues and oversee implementation of short-term initiatives
- Minimize infrastructure costs by initially redeveloping lighter industrial
- Establish forum for community coordinating committee to touch base with city
- Developed phasing scheme

Programming

- Provisions for an occupational retraining facility at appropriate location
- Proposed art committee,
- Proposed clean-energy demonstration
- Mixed land uses commercial industrial open space near existing residential with potential for retail
- Promote a strong sense of place

Reuse Process Critique

- Reuse planning started late in the remediation process
- No long- term plan for certain areas of the site
- Program dependent on city commitment
- Program dependent on private investment
- No committed public-private partnerships formed
- No strong analysis of regional growth needs

Design Compromises and Weakness

Land Use

- Site remediation design is an impediment to reuse
- No housing (yet near housing and housing may not be appropriate)
- Could have more density, no set criteria
- No retail

Transportation

- Does not take advantage of nearby train station
- Primarily car dependent

Environment

- Remedy is a 5-10 year proposition making it difficult to integrate a long term reuse

Implementation

- Funding is lacking
- Development decision may not be predictable, fair or cost effective.
- No strategy to market the site
- Change in city leadership could change priorities
- Remediation is a long term process and make implementation phasing challenging
- Planning was late in remediation process and limits options for redevelopment

Programming

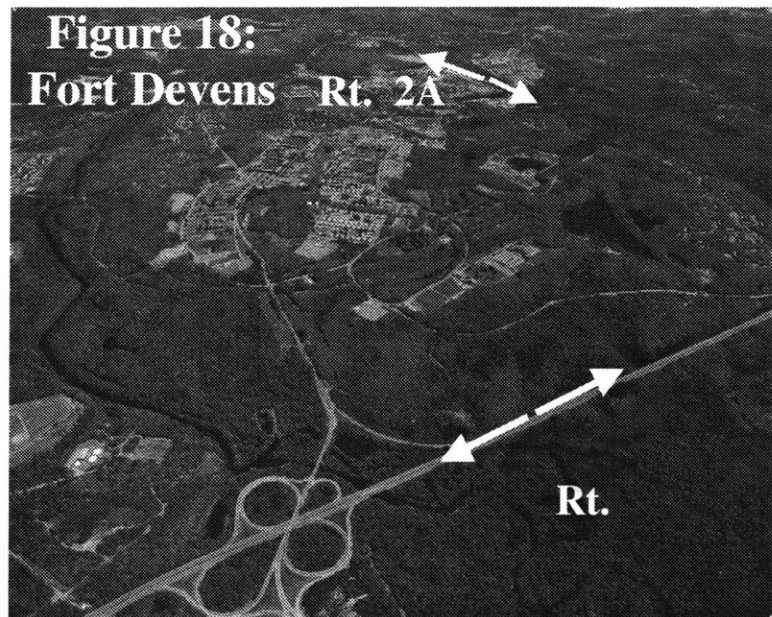
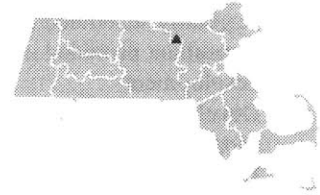
- Design has no mention of the site history

CASE III: FORT DEVENS, MASSACHUSETTS

Site History

Fort Devens is former Army Base located in northcentral Massachusetts 35 miles west of Boston. The site is 9400-acre and straddles the towns of Ayer, Harvard, Shirley, and Lancaster. Fort Devens was originally established as a temporary training camp in 1917 and became a permanent installation in 1931. At its peak, over 15,000 military personnel and their families lived on the Fort Devens base. It operated for the next 60 years serving a variety of military purposes until 1991 when it was targeted for closure under the Base Realignment and Closure Act. The base initiated closure proceedings in 1996, which eventually resulted in an estimated loss of over 5,200 military and almost 1,600 civilian jobs. This has resulted in significant economic impacts for the surrounding towns with the most severe being the town of Ayer, experiencing 14 percent unemployment. The Ayer school system also suffered, losing 75 percent of its students who were military dependents.

The Fort Devens installation was made up of three areas, the Main Post, North Post, and South Post. The Main Post provided all base housing including over 1,700 family units and 9,800 bachelor units (barracks), community services, administrative buildings, training facilities, ammunition storage and an 8.8-acre vehicle maintenance yard. The Main Post also is the site of an 84-acre municipal landfill which existed prior to the establishment of the base and was used by the Army. The North Post was primarily a military airfield but was also used to train troops. In addition, it contained a wastewater treatment plant. The South Post



Source: US EPA 1994

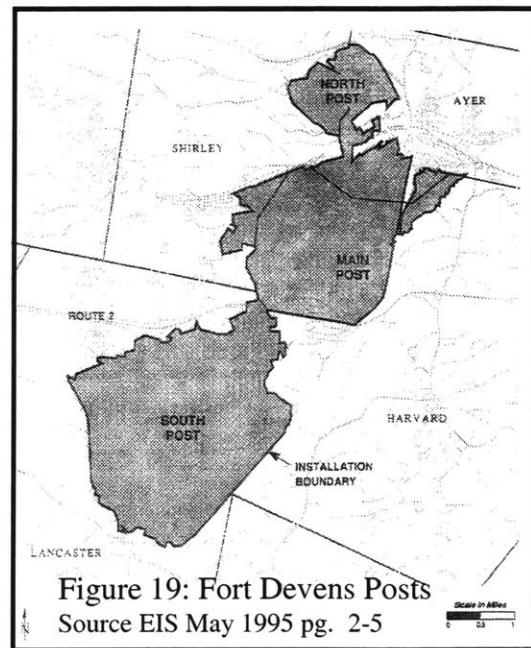


Figure 19: Fort Devens Posts
Source EIS May 1995 pg. 2-5

contained areas for troop training, firing range activities, and an air drop zone.¹⁰⁸ See Figure 22

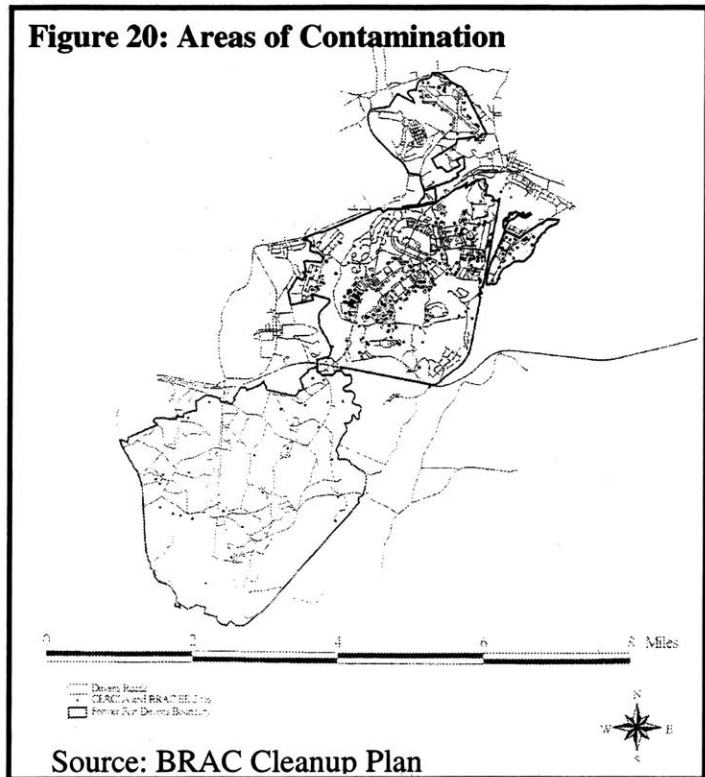
The site is located just north off U.S. Route 2 and south off Route 2A which both have interchanges to Interstate 495. The site has 91 miles of roadways with four main entrance gates. There is a large rail yard in the northeast corner of the site. Commuter rail service in Ayer and Shirley are located within one mile of the site.

The current land use around the site is primarily rural and residential, with an estimated 3,500 households located within two miles of the Fort Devens boundary. In addition, the Nashua River and many of its tributaries run directly through the site, with wetlands located along its banks. The Oxbow National Wildlife Refuge is located just below the southern boundary of the Main Post.¹⁰⁹

The base closure plan consisted of closing the North and Main Post, totaling 4,428 acres, and maintaining the 4,883-acre South Post as an enclave to support Army Reserve training.¹¹⁰

EPA and DoD Remediation Activities^{111,112,113,114}

In 1989, EPA added Fort Devens to the NPL. DoD began investigating the environmental condition of 326 potential areas of contamination (AOC). Eighty-eight of these areas were identified as needing further investigation of hazardous waste contamination. (See Figure 23) In 1991 Fort Devens and the EPA signed a Federal Facilities Agreement pursuant to CERCLA and other applicable environmental statutes and regulations. Under the Federal Facilities Agreement the Master Environmental Plan (MEP) was developed as a comprehensive plan to perform all CERCLA related work. A Fort Devens BRAC Clean up Team (BCT), which consists of representatives from the Army, EPA, and the State of Massachusetts, was formed in 1992 to address the contamination on the site. The BCT was charged with the identification, clean up, and restoration of contaminated areas. Clean up of contamination on any parcel is required before redevelopment can occur. The BCT ensures that future land use is incorporated



¹⁰⁸ U S EPA fact sheet “Fort Devens Superfund Site at a Glance.”

¹⁰⁹ Ibid.

¹¹⁰ Ibid.

¹¹¹ EPA New England Superfund Fact Sheet – “Fort Devens.”

¹¹² BRAC Clean up Plan. pg. 1-2.

¹¹³ Interview with EPA Project Mangers James Bryne and Carol Keating.

¹¹⁴ U.S. EPA Superfund Redevelopment Initiative fact sheet “Fort Devens Superfund Site at a Glance.”

into site risk characterization, coordinates the environmental clean up to meet reuse goals, and advises the real estate arm MassDevelopment when properties are available for transfer and the suitability of use.

Clean up of the 88 areas of contamination (AOC) on the site are being addressed under the MEP through short-term response actions that address immediate threats and long-term clean up. To date, more than 40 short-term actions have been completed under CERCLA and the Massachusetts Contingency Plan, and several more are in progress. Actions include removal and disposal of underground storage tanks, asbestos, building debris, scrap metals, and solvent-saturated soils. Many other contaminated areas of the Fort Devens site are being addressed under authorities other than Superfund.

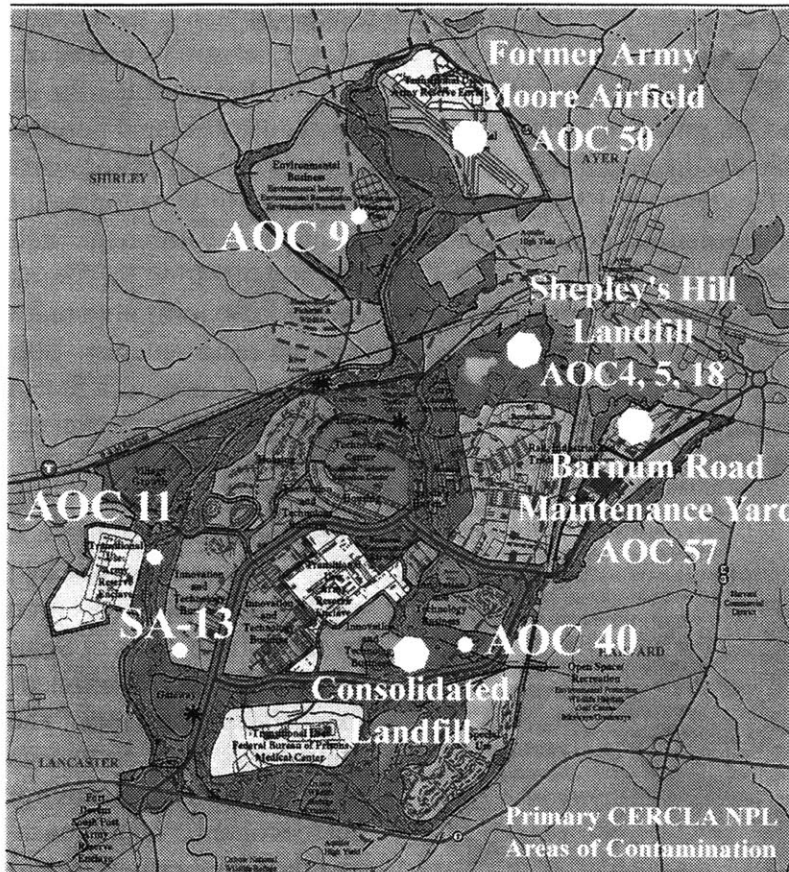
Ten Operable Units (OUs) were identified for further investigation and long-term clean up activity. An OU is an area identified by EPA based on proximity, related geological conditions, common media, or priorities. Several RODs have been or are planned to be complete for these OUs. The most notable OUs are the Barnum Road Maintenance Yard (AOC 57) on the Main Post, Shepley's Hill Municipal Landfill (AOC 1) on the Main Post, the former Army Moore Airfield (AOC 50) on the North Post, and the consolidated landfill on the Main Post. The maintenance yard consisted of an unpaved parking area where military vehicles leaked fuel and oil onto the ground. Additionally, underground storage tanks located at the maintenance yard had released waste oil, resulting in contamination of the surrounding soil with petroleum products and organic chemicals, which are carcinogenic. The selected remedy for the Barnum Road Maintenance Yard was tailored to the future use of the area while protecting human health and the environment. The clean up plan called for soil excavation and ground water monitoring. Additionally, the area will be paved for a parking lot, and the storm drainage system will be redesigned. To date the soil has been removed and was double the volume originality determined. The site will have an institution control measure to prevent groundwater use. (See Figure 21)

Shepley's Hill Municipal Landfill had deteriorated to a point where there was a significant threat of arsenic contamination to the groundwater under the site. This area contained a solid waste incinerator (AOC 4), a sanitary landfill (AOC 5), and an asbestos cell (AOC 18). The incinerator was demolished, and a cap was placed over the municipal and asbestos landfills to control the source of the contamination while allowing for the possible recreational use of the area in the future. A groundwater treatment system has been installed to capture contaminants in the groundwater and prevent further migration. This contamination has already impacted of site groundwater and the near by Paw Shop Pond and Grove Pond. This area will also require institution control measures to prevent groundwater use

The former Army Moore Airfield has groundwater contamination at the North Post, where a plume of polychloroethylene was detected under the airfield. Polychloroethylene is a solvent that was used extensively by the Army to clean parachutes at the airfield. Clean up at the airfield involves excavation of soil areas with extensive solvent contamination, which has been completed, and the ongoing treatment of the groundwater. This area will also require institution control measures to prevent groundwater use.

Several areas from all three posts were identified as needing surface debris removal and/or excavation work (AOC 9, 11, 40, 41 and SA-13, 12). On and off site disposal options were evaluated during the remedial design process. The decision to proceed with on-site consolidation was issued on June 30, 2000 and was chosen based on overall protection of human health and the environment, community input, and best value to the Army. Construction of the consolidation landfill began on September 28, 2000. This project is expected to be completed by June 2003. Additional clean up activities are being planned or are underway for the other contaminated areas on the site.

Figure 21: NPL Sites at Fort Devens



Source: Devens Reuse Plan and BRAC Cleanup Plan

Reuse Process

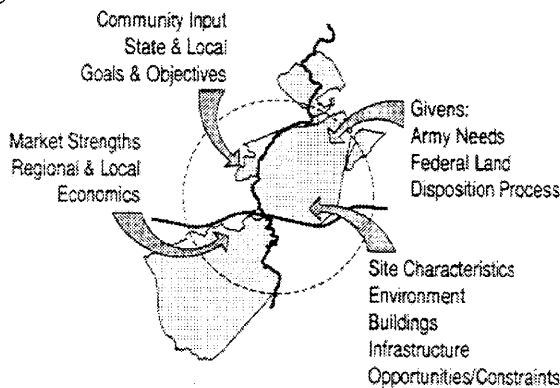
When the Army announced that Fort Devens was to be closed in 1991, the four communities of Ayer, Harvard, Lancaster, and Shirley came together and decided to address the process regionally by forming a Joint Boards of Selectmen coalition. Within weeks, the Governor of Massachusetts announced that he was going to issue an executive order assigning the Massachusetts Government Land Bank (Land Bank) as the local reuse authority. Massachusetts communities do not have constitutional rights and thus are creatures of the state.¹¹⁵

¹¹⁵Case Study in Chapter 2.1 of the ICMA Base Reuse Handbook. 1997.

The communities ended up submitting competing applications for the formation of an LRA and for the funding from the DoD Office of Economic Adjustment (OEA).¹¹⁶ In response to this, OEA took the position that the state and the local communities needed to work out the problem on their own and then submit the solution. Based on this withholding of funds, both sides recognized the need to develop a partnership. By January 1992, the terms of the partnership were agreed upon and submitted to OEA.

In January 1994, the Commonwealth of Massachusetts passed legislation to help shape the future of Fort Devens. This served four main purposes: (1) creation of the Devens Regional Enterprise Zone (currently known as the Devens Commerce Center), which is the portion of the former military base that is being relinquished by the U.S. Army, as well as pieces of land adjacent to the site owned by B&M Railroad and the State; (2) establishment of the the new public agency, Devens Enterprise Commission, comprising community members and political appointees, which is responsible for the permitting of all proposed redevelopment projects; (3) designating the Massachusetts Government Land Bank (which became MasDevelopment in 1999¹¹⁷) with responsibilities for acquisition, control, maintenance, and redevelopment, including the collection of municipal and other service fees; and (4) authorization for Massachusetts Government Land Bank to issue bonds and to borrow up \$200 million to redevelop the site. Additionally, this legislation created incentives for private sector interest. Some of these incentives include the designation of the Devens Commerce Center as a State Economic Target and Opportunity Area, establishment of wholesale utility rates, elimination of personal property tax, and access to water and wastewater treatment at reduced rates.¹¹⁸

Figure 22: Stakeholders



Source: Devens Reuse Plan, November 14, 1994

The process to establish a Reuse Plan began in 1993 and was managed by the professional staff of the DEC. This process involved input by the Joint Boards of Selectmen, Massachusetts Government Land Bank, and extensive public input. The DEC and their consultants first conducted extensive research of existing physical, environmental and socioeconomic conditions. The team evaluated opportunities and constraints through analysis of site characterization through GIS mapping and conducted economic and real estate market research. They incorporated the parcels on the site that

¹¹⁶ OEA is the primary office of DoD with responsibilities for providing adjustment assistance to communities, regions, and states adversely affected by significant DoD changes. OEA provides funding to communities affected by base closure for reuse planning. A community must establish an LRA that is approved by OEA in order to receive funding. (Chapter 2.1 of the ICMA Base Reuse Handbook)

¹¹⁷ The Massachusetts Government Land Bank and Massachusetts Industrial Finance Agency were formally merged Oct. 1, 1999 creating MassDevelopment. MassDevelopment serves as the state's economic and real estate development bank designed to help establish a more favorable climate for business growth and economic success. (Mass Municipal Assoc. www.mma.org/news/news_archives/economic_comm_devel_archiv.html April 2002.)

¹¹⁸ U.S. EPA fact sheet "Fort Devens Superfund Site at a Glance."

were to remain under Federal ownership and received community input through a variety of public forums.¹¹⁹

The public forum program included:¹²⁰

- Phase I: Seven monthly community workshops to develop goals and preferred alternatives.
- Phase II: Five monthly community workshops to develop the by -laws.
- Several subcommittee task forces meeting to address planning, transportation, water resources, open space and recreation, municipal facilities, and infrastructure.
- Public outreach through interviews of key stakeholders; meetings with on-base residents, local business, and state and federal officials; public hearings; town meeting presentations; and distribution of information in newspapers, advertisements and mailings.
- The Devens Charette held on April 15-18 1991 facilitated by the Boston Society of Landscape architects. The Charrette brought together local citizens, public officials, state and Federal agencies, engineering, planning and architectural firms and private business and professional organizations. The themes that emerged from the process include sustainability of industry, diversity of land uses, phasing of growth, and environmental protection.
- Additionally the Devens Redevelopment Board was appointed by the Governor to give advice. The Board was made up of ten members from local government official and regional representatives with expertise in industry, environments, finance, and transportation issues. The board held five public meetings to discuss and receive public input.

The stakeholders saw the need to create a reuse plan to avoid adverse fiscal impacts on the towns, create an orderly redevelopment, accelerate job creation, protect the environment, and to create opportunity to provide input while using state resources. They recognized that the worst case scenario was total abandonment and the land's becoming the fiscal burden of the towns. They believed that "The Devens reuse challenge demands a visionary planning effort grounded in environmental, social, and economic reality. It must be realistic, pragmatic, market driven, flexible, and future oriented." The reuse plan is a "blue print for the next 40-50 years" as it defines land uses, environmental protection, quality development rules, and the legal framework.¹²¹

Integrating Remedy and Reuse (BCT Role)¹²²

In 1992 the BCT met with the Land Bank, Joint Boards of Selectmen and other stakeholders to begin coordination of remediation and reuse. The group laid out the map of AOCs and set up a policy to address the "worst sites first." The development of the 1994 Reuse Plan was informed by working with the BCT. The DEC and MassDevelopment came to all of the BCT meetings throughout the process. The MEP was designed to address environmental contamination and expedite clean up, and many AOCs were remediated quickly through removal actions rather than

¹¹⁹ *Devens Reuse Plan* pg. 2 1992.

¹²⁰ *Ibid.* pg. 21

¹²¹ *Ibid.* pg. 2-5

¹²² Interview with EPA Project Mangers James Bryne and Carol Keating.

undergoing long-term clean up planning. By the end of 2000, each of the 88 sites had either initiated or completed clean up activities. The BCT was instrumental in identifying appropriate clean up methodologies for anticipated future use and integrating the clean up timetable with the reuse goals.¹²³ CERCLA requirements for public involvement were integrated with the community meetings for reuse planning. The structure of the BCT, the DEC, MassDevelopment and the Joint Boards of Selectmen, coupled with community involvement activities under CERCLA and the public participation program in the reuse plan activities, has allowed these remediation and reuse decisions to move forward quickly.

In particular the BCT worked with the Reuse Plan development to ensure that the industrial, commercial and open space land uses were identified for areas of the base that had the most severe contamination. Institutional controls were placed on several areas of the site, and this was coordinated with reuse planning efforts.

The BCT has eliminated an estimated four years of environmental study and saved the government approximately \$5 million. The BCT has also worked closely with the surrounding communities during the investigation and clean up to address local concerns and to ensure that the clean up is consistent with future uses of the base.¹²⁴

Final Reuse Plan

The goals and objectives of the Reuse Plan included:¹²⁵

Goals:

- Development must be sustainable, meaning a balance between economic, social, and environmental needs while maintaining or enhancing the natural resources.
- Provide diversity of uses to avoid dependence on any one use. Provide employment opportunities for range of skill levels.
- Symbiosis of public and private uses.
- Balance local, regional and state issues.

Objectives:

- Foster use to create similar number of jobs.
- Utilize skills and experience of region.
- Long-term mix of uses that enhances regional economy through future growth potential.

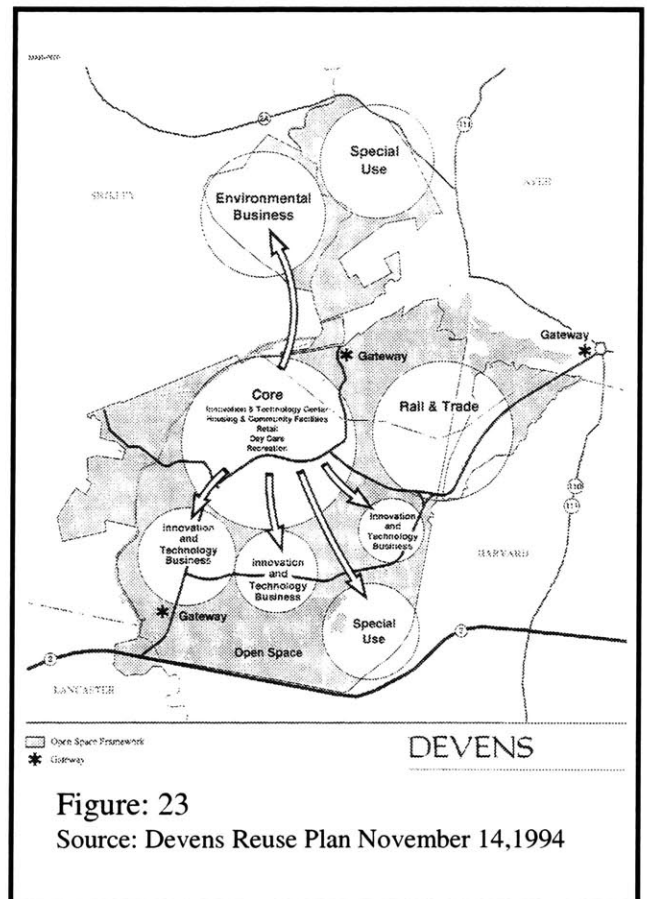


Figure: 23

Source: Devens Reuse Plan November 14, 1994

¹²³ Interview with EPA Project Manager Jim Byrne.

¹²⁴ U.S. EPA fact sheet "Fort Devens Superfund Site at a Glance."

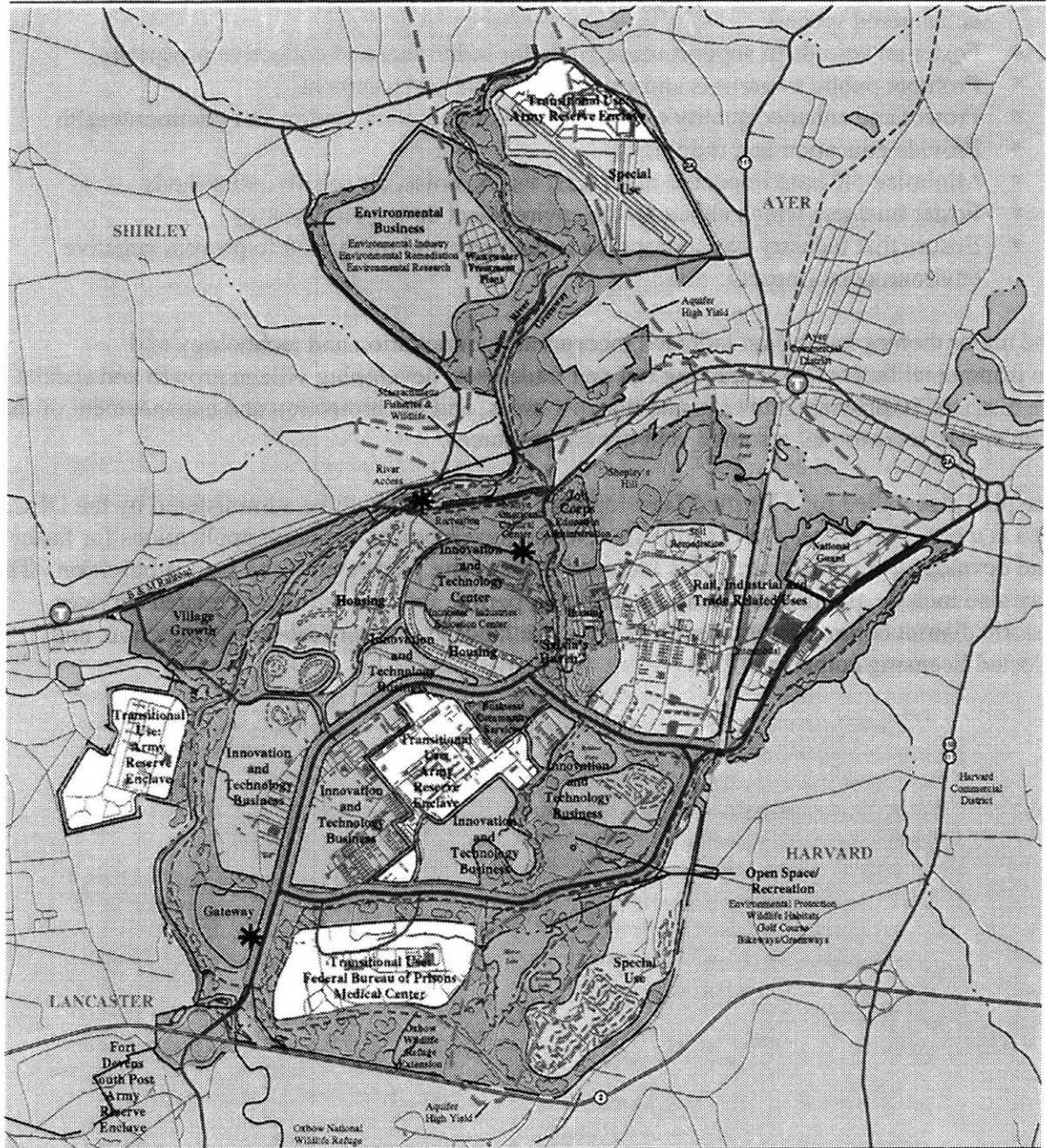
¹²⁵ Devens Reuse Plan pg. 2-5 1992

- Build on unique qualities of Devens and protect historic and ecological resources, endangered species
- Foster an attitude to support reuse goals for individual and collective prosperity.
- Promote public awareness and enjoyment of the environment
- Protect and enhance quality of life of host communities, region and commonwealth
- Provide education and training
- Minimize off-base impact to resources: water, noise, air quality, viewsheds
- Foster business which enhances the environment through technology
- Ensure that industry has appropriate technology and mitigation to prevent negative environmental impacts.

The major themes in the plan included incorporating innovation and technology and environmental businesses, attracting rail and trade uses, developing village growth and special use districts, improving gateways and housing areas, and the protection and enhancement of the open space, recreational resource, and natural resources.

The plan also called for a Unified Development Permit System to be administered by the DEC. This is a one-stop process to expedite review and development of permit applications for faster land development permitting. This includes zoning, site plan review and land subdivision. This may also include granting of variances, building permit and inspection and related services, historic district control, public health powers, wetlands and water resources protection, and selected licensing authority.¹²⁶

¹²⁶ Rules and Regulations, Devens Enterprise Commission, November 1, 1999



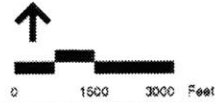
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|--|---------------------------------------|--|--|
| | Open Space & Recreation | | Transitional Use Army Reserve Enclave & Federal Bureau of Prisons Medical Center |
| | Innovation & Technology Business | | Gateway |
| | Rail, Industrial & Trade-Related Uses | | Special Use |
| | Environmental Business | | High Yield Aquifer |
| | Housing | | Conceptual Trails & Bikeways |
| | Business & Community Services | | Commuter Rail |
| | Innovation & Technology Center | | |
- Note:
See Parcel Maps for Delineation of Zoning Districts.

DEVENS

Figure: 24

Devens Reuse Plan

November 1994



5 25 Acres

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Community Benefits

The closure of Fort Devens and the remedies chosen to clean up the site were key factors in its redevelopment. As an Army base, Fort Devens had extensive infrastructure in place and was being used for a variety of operations. At the time of the base's closure, studies indicated that approximately 5.6 million square feet of land and over 2 million square feet of existing buildings and facilities had potential reuse because of their location and access to major highways and rail service.¹²⁷

As part of the Fort Devens site redevelopment, DoD transferred large portions of the site to other Federal departments and the State to provide public services and attract private businesses. DoD retained control of 5,000 acres of land, including all of the South Post and portions of the Main and North Posts, for construction of a new Army Reserve enclave and training area. DoD transferred the remainder of the site to the Department of Labor (DOL), the Department of Justice (DOJ), and a State-designated developer for public and private development. DoD transferred approximately 22 acres of land to DOL, which is building a Jobs Corp Center; 222 acres to the DOJ, where a Federal Bureau of Prisons Hospital is being built; and approximately 836 acres along the Nashua River to the Fish and Wildlife Service (FWS) for an extension to the Oxbow National Wildlife Refuge. The remainder of the Main and North Posts was transferred to MassDevelopment to promote and oversee private redevelopment.¹²⁸

MassDevelopment is redeveloping Devens by creating a sustainable and diverse residential and business community. Several public and private sector employers have taken advantage of this redevelopment potential and have located, or are planning to locate, at the site.¹²⁹ A variety of unique and flexible programs is offered through MassDevelopment to help finance businesses that locate in Devens. Many of the financial tools that are offered through MassDevelopment are at below-market rates and offer

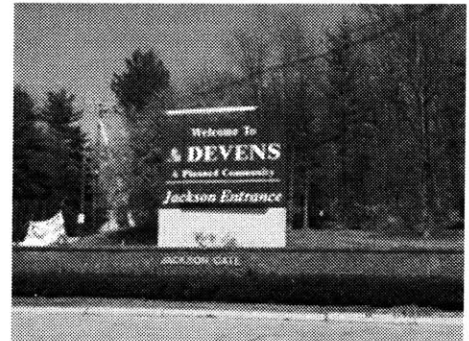


Figure 25: Fort Devens a) gateway; b) housing; c) golf course

¹²⁷ U.S. EPA fact sheet "Fort Devens Superfund Site at a Glance."

¹²⁸ Ibid.

¹²⁹ Ibid.

valuable tax incentives. All programs support the goals of MassDevelopment - to aid in the growth, expansion, and advancement of all businesses and institutions in the state.¹³⁰

The accomplishments of the Devens five-year redevelopment anniversary were reported in the June 2001 *Devens Development Newsletter* as follow:

Shared Accomplishments

- Reaching \$450 million in combined private sector investment for land, building and equipment
- Investing over \$105 million for operations, capital improvements
- Preserving 2,100 acres of open space
- Building \$16 million wastewater treatment facility serving the Nashua River region
- Permitting for companies averaging 45 days
- Cleaning up environmentally contaminated sites (\$77 million invested so far)
- Serving 150,000 participants through recreational programs

Living & Working at Devens

- Approaching 5.4 million square feet of build out (actual and pipeline projects).
- Employing 3,100 people (850 living in the host communities) at 75 companies and institutions.
- Attracting 600 high-tech jobs, 8 companies to Jackson Technology Park.
- Filling Robbins Pond Technology Park, West Rail Industrial Park nearly sold out.
- Designing new bio-tech lab space and renovating space occupied by 11 small companies.
- Establishing workforce development program with Mt. Wachusett Community College.
- Developing 102 units of residential housing with 25% affordable units.
- Creating innovative new school district to serve Devens area families.
- Expanding services to disadvantaged populations by renovating 40 units of housing for homeless veterans and planning a new transitional housing facility for Sylvia's Haven.
- Maintaining 92 miles of road, 330 acres of improved grounds, 525,000 square feet of unused buildings.
- Serving the public by responding to more than 1,500 fire, ambulance and police calls.
- Constructing a public golf course under the Audubon International Signature Sanctuary Program.

Building a Sustainable Community

- Achieve build out of 8.5 million square feet with development concentrated in the "core" of Devens.
- Develop parcels outside the "core" Moore Airfield, environmental business zone, Salerno housing area and Davao housing area through a collaborative master-planning effort with the host communities to meet their needs.
- Create new child care center serving 125 children & families in summer 2001.
- Construct 180 units of new housing in phase 2 with a minimum 25% and potentially up to 50% set aside as affordable units.
- Explore with the host communities the need to develop additional residential housing beyond the 282 units allowed under the reuse plan.

¹³⁰ Devens Community web page: Tax Incentives & Finance Programs, www.devenscommunity.com/ May 2002.

- Plan the "downtown" area to accommodate a variety of uses including retail, office, residential, hospitality, cultural and civic activities.
- Manage municipal operations to achieve a financial breakeven status on an annual basis.

Additionally the recreational amenities include:¹³¹

- 600 acres of conservation and preservation land with hiking trails
- Mirror Lake for swimming, picnicking, non-motorized boating, and fishing
- The Devens Tennis Complex with tennis, basketball, and handball courts
- The Red Tail Golf Club, an new 18-hole championship golf course
- Rogers Field with a 44-acre sports field
- Willard Park, a multi-use field and softball fields
- The Devens Fitness and Wellness Center
- Devens Sports Arena with an 18,000 square foot gymnasium used for youth activities, camps and events
- Washington Hall for Resident Campers with a number of resident and day sport camps

¹³¹ Found on the Devens Community web site at www.devenscommunity.com/recreation/activities.html. May 2002.

Reuse Process Attributes

- Diverse stakeholder group
- Encourage citizen and stakeholder participation in development decisions
- Looked at regional implication of design
- Oriented to stimulate economic activity and job creation along with social enhancement

Design Strengths

Land Use

- Mixed land uses: housing, industrial, commercial, and open space.
- Take advantage of existing assets
- Strengthen and encourage growth of existing community
- Utilized existing infrastructure

Transportation

- Enhancement of gateways to provide access to surrounding areas
- Reuse of existing roadways provide internal flow and access

Environment

- Protection and enhancement of critical natural environmental resources including wetlands, rivers, streams, open waters, sensitive habitats, vegetation, and aquifers.
- Protection of the National Wildlife Refuge
- Enhancement and protection of open space

Implementation

- Funding for implementation
- Development is predictable, fair and cost effective
- Incorporated regional growth issues
- Remediation and redevelopment schedules coordinated

Programming

- Many recreational facilities
- Many municipal and education services
- Redevelopment theme areas
- Promote a strong sense of place

Reuse Process Critique

- Creation of an LRA involves adding a new governmental entity and additional governmental layer

Design Compromises and Weaknesses

Land Use

- Sprawling development
- Could have more density in core areas
- Not necessarily walkable
- "Big box" warehouses

Transportation

- No internal transit as part of the plan
- No plan in place to transport people to nearby commuter rail train station

Environment

- Limited contamination in the lake
- Lead paint contamination in existing housing may deter investment

Implementation

- Large area and difficult to redevelop quickly
- Requires ongoing marketing to entice private development

Programming

- School system not incorporated
- Proposed retail areas not detailed

6 Conclusions

Incorporation of good urban design principles for a Superfund site redevelopment project is a difficult proposition. Urban design takes a commitment of time and resources. It requires a diverse and representative stakeholder group. It requires a political will including a commitment from local government to adjust land use regulations. It is market driven and involves compromises. Additionally a successful project needs to work out issues of ownership, liability protection, clean up timing, institutional controls, and image problems from stigmatization.

There is ample evidence that the built environment matters to communities - not just for social and economic reasons, but also for environmental reasons of national concern. Issues related to our built environment are growing in importance and, if left unaddressed, will make it difficult to meet our nation's environmental goals. Fortunately, communities, regions, and states are starting to find ways to expand and achieve better economic, community, and environmental outcomes.¹³² Communities have choices in their development decisions. Communities can exercise these choices by developing the built environment in ways that contribute toward the attainment of health and environmental goals. Projects that are well received are more likely to be successful and profitable. Incorporating urban design principles is an opportunity to begin erasing the Superfund site bad image and recreating a sense of place for the inhabitants.

LESSONS LEARNED FROM CASE STUDIES

Stakeholder involvement and reuse plan development can lead to enhanced quality of life for a community. The three case studies highlighted projects which were able to progress because of EPA intervention. Industri-Plex was enforcement driven, Silresim was a proactive action and programmatically driven, and Fort Devens was driven by DoD regulatory requirements. These cases represent an evolution through time of where EPA has been, is currently and can move towards in encouraging stakeholder involvement and good urban design in the redevelopment of an NPL site

EPA needs to be a team player in order for redevelopment planning to occur on an ongoing site clean up. Yet merely accommodating the needs of the stakeholder group may not be enough to achieve place making on a site. In the case of Industri-Plex, the stakeholder group was not necessarily representative of the nearby residents. Their redevelopment goals were either an economic proposition or one which fulfilled a mission of a government entity. Although the final design brought a great deal of economic community benefits it did not optimize the assets of the land given its location. The design has limited use types which are disconnected, and car dependent, with big box retail space and no housing. Although there are several small gestures to integrate quality of life enhancing attributes, such as including sidewalks, naming the train station after a local resident affected by the contamination, and an architecturally interesting train station, this design falls short of integrating design features to create a sense of place. The design

¹³² From the conclusions of *Our Built and Natural Environments A Technical Review of the Interactions between Land Use, Transportation, and Environmental Quality*. 2001.

does incorporate the preservation and enhancement of wetlands, yet these decision wer legally driven.

EPA needs to initiate and support reuse planning early in the site remediation process. In the case of the Silreism Chemical Company Site, EPA funded a reuse process in an area of the city which had been neglected do to fears associated with contamination. The reuse process sparked significant interest and provided education on liability to many different stakeholder groups. The reuse plan if implemented will enhance the total social well being of this community. The design incorporates aspects of mixed land use, transportation enhancement, creation of open space, and restoration of natural resources. Implementation of this plan lacks financial backing and will take many years to accomplish. If the reuse planning process were initiated twenty years prior when the remediation planning began, the city would have had more time to plan for reuse and the remediation deign would have been more accommodating to reuse.

EPA needs to learn for the guidance and experiences of reuse planning for base closures. The closing of Fort Devens was a major blow to the surrounding communities. The reuse planning process was challenging due, at times, to conflicting interests of the many stakeholder groups. The many aspects of BRAC including reuse planning funding, integration of reuse planning and remediation, quick and responsive clean up, accountability, and liability relief allowed for a successful reuse plan and implementation of the site. The community involvement guidance provides direction for communities to establish reuse goals beyond economic redevelopment. This is a good model for EPA.

For each case the established designs goals were more market based rather than focused on quality of life. Although some key design principles were not incorporated into the designs and each design involved compromises, they represent progress towards responsible development. These results seem promising and encouraging for future progress. With more direction and encouragement from EPA, stakeholders in Superfund site redevelopment can begin to embrace place making.

RECOMMENDATIONS FOR CHANGE AT EPA

Chapter 1 posed the question: **How can EPA not only encourage stakeholder involvement to identify appropriate site reuse but also foster place making in the redevelopment of an NPL site?**

Lets first ask *does EPA belong in the land use business?* Yes; in a January 2001, EPA issued a paper titled *Our Built and Natural Environments* in which it stated that EPA plans to continue building knowledge about the relationships between land use, transportation, and the environment as it supports our nation in meeting its environmental and human health goals.¹³³ U.S. urban form, including its land use and transportation components, has changed significantly in recent decades. These changes affect environmental quality over the short and the long run, and interfere with the ability of the U.S. to meet its health and environmental goals. Current development patterns are not simply due to population growth and therefore are not inevitable.

¹³³ Ibid.

EPA is promoting community involvement and stakeholder participation through many of its programs including CERCLA activities under the Remedial and Removal Programs, the Brownfields program, and other such as Project XL. Additionally EPA has promoted the need for quality urban design principles through its smart growth initiative.

In order to move closer to successful Superfund site redevelopment, the EPA SRI Team should initiate a dialogue with academic and professional experts on which urban design principles to promote in the program. These principles should be geared to regional environmental protection and enhancement of overall quality of life attributes. This dialogue should start with the smart growth principles and build more specific guidance around issues in Superfund redevelopment.

The most aggressive recommendation for change would be for new legislation that requires the reuse planning and oversight by a local redevelopment authority. Funding would also need to be provided for the redevelopment process. This legislation would have to require an evaluation of the proposed plans against the regional growth management objectives and incorporate appropriate design principles such as those under smart growth. The two precedents for such legislation can be found in BRAC and the Small Business Liability Relief and Brownfields Revitalization Act. This legislation would need to broaden the authority for land use planning beyond the boundaries of the site. It would need to require integration of remediation and redevelopment goals beyond the sole objective of protecting public health and the environment for the immediate area but also to look at the consequences of the larger regional environment and to set reuse goals accordingly.

With or without legislative change there should be policy change at EPA. This should start with educating the workforce to raise awareness and understanding of the environmental enhancing consequences of good urban. This policy should include incorporating efforts to promote responsible reuse design into the performance requirements of employees. EPA could begin to shift the workforce expertise to include land use experts and/or multidisciplinary engineers and scientists with land use and urban design training. EPA should also allocate funds for reuse planning on all Superfund sites. The EPA should develop community involvement guidance, similar to DoD guidance, with clearly articulated design principles. The evaluation of each design principles should be a requirement of the funding.

At minimum the SRI team should provide both internal and external training and education on the merits of reuse planning and good urban design which leads to place making. The SRI team should create a comprehensive approach to learn from and promote success stories (especially DoD cases) highlighting benefits of incorporated design principles, to develop a prototype for a reuse assessment, and fund reuse planning activities.

Appendix A: EPA Guidance and Policy Relevant to the Superfund Redevelopment

EPA Guidance and Policy Relevant to the Superfund Redevelopment *		
Title	Date	Description
Small Business Liability Relief and Brownfields Revitalization Act	January 2002	Provides liability relief to certain types of property owners and establishes a grant program to fund and provide technical assistance for Brownfields redevelopment related activities.
Community Reinvestment Act (CRA)	1997	Congress enacted the Community Reinvestment Act (CRA) requiring lenders to make capital available in low- and moderate-income urban neighborhoods, thereby giving rise to concerns over potential environmental and financial liability for clean ups at sites by lenders, developers, and property owners. The CRA establishes creative initiatives for economic development while easing the fears of financial liability and regulatory burdens.
Final Policy Toward Owners of Property Containing Contaminated Aquifers.	July 3, 1995	This policy addresses the CERCLA liability of owners of property that contain an aquifer contaminated by a source or sources outside their property.
Guidance on Landowner Liability Under Section 107(a) of CERCLA, De minimis Settlements Under Section 112(g)(1)(B) of CERCLA, and Settlements With Prospective Purchasers of Contaminated Property.	June 6, 1989	This guidance outlines EPA's policy on issues of landowner liability, and settlement with de minimis landowners under CERCLA. There is also a brief discussion and policy statement concerning settlement with prospective purchasers of contaminated property.
Guidance on Settlements with Prospective Purchasers of Contaminated Property.	May 1995	During the past several years, EPA has entered into a number of prospective purchaser agreements to enable purchasers to buy contaminated property for clean up, redevelopment or reuse. This is a revised guidance from 1989 that reflects both Agency experience in implementing the 1989 guidance and changes to that guidance that EPA believes are needed.

EPA Guidance and Policy Relevant to the Superfund Redevelopment continued*		
Interim Approaches for Regional Relations with State Voluntary Clean up Programs.	November 14, 1996	EPA regional offices have developed partnerships with states with voluntary clean up programs through the negotiation of the Memorandum of Agreement (MOA). During the negotiation of an agreement, EPA and the interested state address state capabilities, programmatic areas, and the types of sites to be included. EPA's guidance is intended to facilitate regional/state MOA negotiations.
Reuse Assessments: A Tool To Implement The Superfund Land Use Directive	June 2001	Provides guidance on the development of the "Reuse Assessment" for collecting and evaluating information to develop assumptions about reasonably anticipated future land use(s) at Superfund sites.
Land Use in the CERCLA Remedy Selection Process.	May 1995	EPA's land use directive promotes early discussions with local land use planning authorities, local officials, and the public regarding reasonably anticipated future uses of the property on which a National Priorities List site is located. The directive also encourages the use of realistic assumptions regarding future land use in the baseline risk assessment, the development of remedial alternatives, and the CERCLA remedy selection process.
Hazardous Waste Site Redevelopment: A Guidebook for Assessing Socioeconomic Impacts and Environmental Benefits	Draft December 1998	Detailed methods for calculating socioeconomic impacts and environmental benefits of a Brownfields or Superfund redevelopment project.
Reusing Cleaned up Superfund Sites: Commercial Use Where Waste is Left on Site	December 2001	Provides detailed information on the technical aspects of safely integrating the design of commercial facilities into Superfund clean ups where some of the hazardous wastes will be, or have been contained on site.
Reusing Cleaned up Superfund Sites: Recreational Use of Land Above Hazardous Waste contamination Areas	March 2001	Provides detailed information on the technical aspects of safely integrating the design of recreational facilities into Superfund clean ups where some of the hazardous wastes will be, or have been contained on site.
Reusing Superfund Sites: Turning Toxic Wastelands into Productive Assets	March 2001	Short summary of ways a community can get EPA and other assistance for Superfund site redevelopment..

EPA Guidance and Policy Relevant to the Superfund Redevelopment continued*

Policy on the Issuance of Comfort/Status Letters.	November 12, 1996	Some properties may remain unused or underutilized because potential property owners, developers, and lenders are unsure of the environmental status of these properties. By issuing comfort letters, EPA helps interested parties better understand the likelihood of EPA involvement at a potentially contaminated property.
Tools for Managing Liability	July 1999	The Tools provide information concerning Superfund liability, with descriptions of comfort letters, prospective purchaser agreements, and statements of EPA's policies towards particular parties.
Presumptive Remedies: Site Characterization and Technology Selection for CERCLA Sites with Volatile Organic Compounds in Soil.	January 19, 1993	This fact sheet outlines the presumptive remedies for soils contaminated by volatile organic compounds at CERCLA sites. Charts and matrices are included to explain and compare the various technologies.
Presumptive Response Strategy and Ex-Situ Treatment Technologies for Contaminated Groundwater at CERCLA Sites.	October 1996	This guidance addresses the importance of using site-specific remedial objectives as the focus of the remedy selection process for contaminated groundwater.
Road Map to Understanding Innovative Technology Options for Brownfields Investigation and Clean up	June 1997	The Road Map identifies potential technology options available at each of the basic phases involved in the characterization and clean up of brownfields sites: site assessment, site investigation, clean up options, and clean up design and implementation.
Rules of Thumb for Superfund Remedy Selection.	October 2, 1995	This document briefly summarizes key elements of various remedy selection guidance documents and policies, and describes the three major policy areas or remedy selection: 1) risk assessment and risk management; 2) development of remedial alternatives; and 3) groundwater response action.
Tool Kit of Information Resources for Brownfields Investigation and Clean up.	June 1997	The Tool Kit provides abstracts and access information for a variety of relevant resources, including electronic databases and bulletin boards, newsletters, regulatory and policy guidance, and technical reports.

EPA Guidance and Policy Relevant to the Superfund Redevelopment continued*		
The Alternative Dispute Resolution Fact Sheet.	May 1995	Alternative Dispute Resolution (ADR) is a tool which enhances the negotiating process. ADR is a standard component of EPA's enforcement program. This fact sheet answers common questions about the use of ADR in enforcement actions and describes how to use ADR in your case.
Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA)	1980	The full law with amendments.
General Policy on Ability to Pay Determinations.	September 30, 1997	This document explains what is necessary for an acceptable ability to pay (ATP) settlement in Superfund cases, and addresses the general issues applicable to both the ATP process and ATP settlements.
Guidance on Deferral of NPL Listing Determinations While States Oversee Response Actions.	May 3, 1995	The deferral guidance provides a framework for regions, states, and tribes to determine the most appropriate, effective, and efficient means to address response at sites. Implementation is to be flexible so as to account for the different capabilities of these acting parties.
Guidance on Premium Payments in CERCLA Settlements.	November 17, 1988	This guidance discusses the use of a premium payment in CERCLA settlements. It describes the key features of a premium payment settlement, considerations regarding timing of the settlement, and the factors to be considered in deciding if a premium should be accepted.
Issuance of Revised "Model CERCLA Section 122(g)(4) De Minimis Contributor Consent Decree and Administrative Order on Consent."	December 7, 1995	This model represents the thinking behind CERCLA Section 122(g)(1)(A) de minimis contributor settlements and are the product of years of experience gained in administering the de minimis settlement provisions of CERCLA.
Methodology for Early De Minimis Waste Contributor Settlements under CERCLA section 122(g)(1)(A).	June 2, 1992	This policy provides guidance for early consideration and proposals of de minimis settlements under CERCLA section 122(g)(1)(A). It includes the methodology to facilitate settlement and procedures for identifying early de minimis candidates.

EPA Guidance and Policy Relevant to the Superfund Redevelopment continued*

National Contingency Plan (40 C.F.R. Part 300).		The National Hazardous Substances and Oil Pollution Contingency Plan, commonly called the National Contingency Plan (NCP), establishes a comprehensive process by which the federal government responds to both oil spills and hazardous substances. The NCP coordinates response efforts such as accident reporting, spill containment, clean up, and personnel contacts.
The National Priorities List for Uncontrolled Hazardous Waste Sites; Listing and Deletion Policy for Federal Facilities.	November 24, 1997	This document establishes an interim final revision to the Agency's policy on placing federal facilities on the National Priorities List. The interim final policy revisions apply to federal facility sites that are RCRA-regulated facilities engaged in treatment, storage, or disposal of hazardous waste.
Partial Deletion of Sites Listed on the National Priorities List.	November 1, 1995	EPA deletes sites from the NPL with state concurrence when no further clean up response is warranted under CERCLA. Historically, only entire sites could be deleted from the NPL. Under this policy, parties may petition EPA for partial deletion.
Policy for Municipality and Municipal Solid Waste CERCLA Settlements at NPL Co-Disposal Sites	February 5, 1998	This policy supplements the Interim Policy on CERCLA Settlements Involving Municipalities and Municipal Waste. Under this policy, EPA continues the practice of generally not indentifying generators and transporters of municipal solid waste as potentially responsible parties at NPL sites.
Policy Towards Owners of Residential Property at Superfund Sites.	July 3, 1991	This policy states that EPA, in the exercise of its enforcement discretion, will not take enforcement actions against an owner of residential property unless his activities lead to a release or threat of release of hazardous substances, resulting in the taking of a response action at the site.
Presumptive Remedies: Policy and Procedures.	September 1993	Presumptive remedies are preferred technologies to be used for clean ups at common categories of sites. EPA's presumptive remedies limit the number of technologies considered for clean up at similar sites and result in streamlined site assessments, remedy designs, and accelerated remedy selection decisions which save time and money.

EPA Guidance and Policy Relevant to the Superfund Redevelopment continued*		
Presumptive Remedy for CERCLA Municipal Landfill Sites.	September 1993	This fact sheet establishes containment as the presumptive remedy for CERCLA municipal landfill sites. It also addresses certain streamlining principles related to the planning of remedial investigations/feasibility studies and provides guidance on the level of detail appropriate for risk assessment.
Procedures for Partial Deletions at NPL Sites.	April 30, 1996	The Partial Deletions rule allows EPA to delete releases at portions of NPL sites, provided that deletion criteria are met. Previously, EPA's policy had been to delete releases only after evaluation of the entire site. However, deletion of entire sites does not communicate the successful clean up of portions of those sites. Total site clean up may take many years, while portions of the site may have been cleaned up and may be available for productive use. This policy will help to alleviate the concerns or potential developers who are scared off by NPL sites.
Revised Guidance on CERCLA Settlements with De Micromis Waste Contributors.	June 3, 1996	"De micromis" settlements may be available to parties who generated or transported a miniscule amount of waste to a Superfund site, an amount less than the minimal amount normally contributed by the de minimis parties. EPA's revised guidance defines eligible "de micromis" parties with volumetric cut-offs. "De micromis" settlements provide both a covenant not to sue from the Agency and contribution protection against other parties at the site.
Soil Screening Guidance: Fact Sheet.	June 1996	EPA's Soil Screening Guidance helps standardize and accelerate the evaluation and clean up of contaminated soils at NPL sites where future residential land use is anticipated. To help identify areas at NPL sites that need further investigation or that can be screened out from further consideration, the guidance provides a step-by-step methodology for determining levels of soil contamination.
Standardizing the De Minimis Premium.	July 7, 1995	This guidance is intended to simplify the premium determination process and promote greater national consistency in this aspect of de minimis settlements.

EPA Guidance and Policy Relevant to the Superfund Redevelopment continued*

Streamlined Approach for Settlements With De Minimis Waste Contributors under CERCLA Section 122(g)(1)(A).	June 30, 1993	This guidance encourages EPA Regional offices to take a more active role in facilitating de minimis settlements by establishing minimum levels of information necessary before considering a de minimis settlement, and providing a methodology for payment.
This Is Superfund - A Citizen's Guide to EPA's Superfund Program.		This guidance introduces basic issues regarding the Superfund program. Topics addressed include how Superfund sites are discovered, and who pays for and is involved in clean ups. Key terms for understanding the Superfund Program, such as potentially responsible parties (PRPs) and National Priorities List (NPL).
CERCLA Orientation Manual.	October 1992	This manual serves as a guide and reference to the Comprehensive Environmental Response, Compensation, and Liability Act. The purpose of this manual is to assist EPA and state personnel involved with hazardous waste remediation, emergency response, and chemical and emergency preparedness.
Policy Towards Landowners and Transferees of Federal Facilities.	June 13, 1997	This policy was created to address the potential liability concerns of non-federal parties who acquire federal facility property. The intent of this policy is to alleviate uncertainty regarding potential enforcement action by the EPA against landowners and transferees (i.e., lessees) of federal facility properties.
Recently Enacted Lender and Fiduciary Liability Amendments	October 3, 1996	A "fiduciary" is a person who acts for the benefit of another party. Common examples include trustees, executors, and administrators. CERCLA protects them from liability in certain situations but not in others.
Handbook of Tools for Managing Federal Superfund Liability Risks at Brownfields and Other Sites	November 1988	A compilation of tools to encourage the clean up and reuse of contaminated property and address Superfund environmental liability based barriers.

* Much of the information contained in this table was obtained on the EPA Superfund Web Site under EPA Guidance and Policy, www.epa.gov/superfund/programs/recycle/policy.htm, February 2002

Appendix B: Acronyms

ARARs	Applicable or Relevant and Appropriate Requirements
AOC	Area of Contamination
BCRA 88	Defense Authorization Amendments and Base Closure and Realignment Act of 1988
BCP	BRAC Clean up Plan
BCT	BRAC Clean up Team
BRAC	Base Realignment and Closure
BTC	Base Transition Coordinator
CAB	Community Advisory Board
CAG	Community Advisory Group
CC	Construction Complete
CD	Consent Decree
CDBG	Community Development Block Grant
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
DBCRA 90	Defense Base Closure and Realignment Act of 1990
DBOF	Defense Business Operations Fund
DDESB	Department of Defense Explosive Safety Board
DEIS	Draft Environmental Impact Statement
DERP	Defense Environmental Restoration Program
DoD	Department of Defense
DOI	Department of the Interior
DOJ	Department of Justice
DOL	Department of Labor
DOT	Department of Transportation
DRMO	Defense Reutilization and Marketing Office
DSMOA	Defense-State Memorandum of Agreement
EA	Environmental Assessment
EBS	Environmental Baseline Survey
EDA	Economic Development Administration
EDC	Economic Development Conveyance
EJ	Environmental Justice
EIS	Environmental Impact Statement
EPA	Environmental Protection Agency
ESA	Endangered Species Act
FACE	For a Cleaner Environment
FFCA	Federal Facilities Compliance Act
FS	Feasibility Study
FWS	Fish and Wildlife Service
FY	Fiscal Year
GAO	General Accounting Office
GSA	General Services Administration

HRS	Hazardous Ranking Score
HUD	Department of Housing and Urban Development
IAG	Interagency Agreement
ICMA	International City/County Management Association
IRP	Installation Restoration Program
LRA	Local Redevelopment Authority
MA DEP	Massachusetts Department of Environmental Protection
MA DOT	Massachusetts Department of Transportation
MBTA	Massachusetts Bay Transportation Authority
MEP	Master Environmental Plan
MOM	Management of Migration
MPT	Mark Phillip Trust
NCP	National Oil and Hazardous Substances Pollution Contingency Plan
NDNE	National Development of New England
NEPA	National Environmental Policy Act of 1969
NGO	Non-Governmental Organization
NHPA	National Historic Preservation Act
NOI	Notice of Intent
NPDES	National Pollutant Discharge Elimination System
NPL	National Priorities List
OEA	Office of Economic Adjustment
O&M	Operation and Maintenance
OMB	Office of Management and Budget
OU	Operable Unit
PA/SI	Preliminary Assessment/Site Investigation
PCBs	Polychlorinated Biphenyls
PPA	Perspective Purchasers Agreement
PRP	Potential Responsible Party
RA	Remedial Action
RAB	Restoration Advisory Board
RCRA	Resource Conservation and Recovery Act
RD	Remedial Design
RI	Remedial Investigation
ROD	Disposal Record of Decision under NEPA
SARA	Superfund Amendments and Reauthorization Act
SCC	Silresim Chemical Corporation
SRI	Superfund Redevelopment Initiative
TOD	Transit Oriented Development
UAO	Unilateral Administrative Order
UDAG	Urban Development Action Grant
ULI	Urban Land Institute

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Interviews:

Jame Bryne, Remedial Project Manger, U.S. EPA New England Office

Brain Clancy, Vice President, National Development

Brain Connors, Economic Development Officer, City of Lowell Massachusetts

Mayor John Curan, Woburn Massachusetts

Thomas Galigani, Economic Development Director, City of Lowell Massachusetts

Rona Gregory, Attorney, U.S. EPA New England Office
Chet Janowski, Remedial Project Manger, U.S. EPA New England Office
Carol Keating, Remedial Project Manger, U.S. EPA New England Office
Joseph Lemay, Remedial Project Manger, U.S. EPA New England Office
Jack Marlow, Director, Woburn Redevelopment Authority
John Podgurski, Superfund Redevelopment Coordinator, U.S. EPA New England Office
Chris Reed, Stross Urabanism, Landscape Consultant
Dan Winograd, Senior Council, Environmental Management, Massachusetts Institute of
Technology