

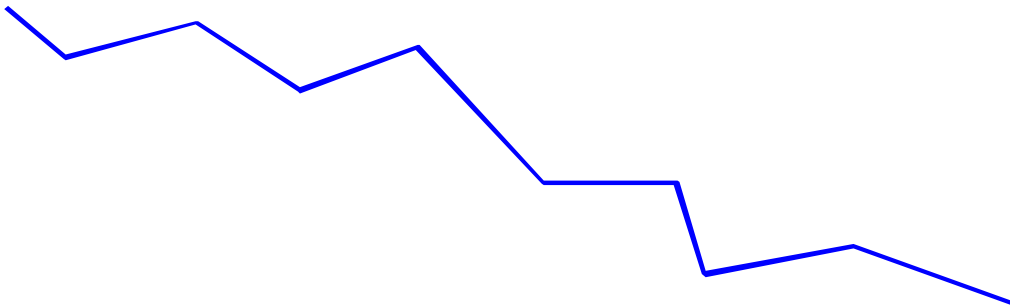
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Reclamation and Economic Regeneration of Brownfields

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The E.P. Systems Group, Inc.

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RECLAMATION AND ECONOMIC REGENERATION OF BROWNFIELDS

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PREFACE

This paper was prepared pursuant to a Cooperative Agreement between the Economic Development Administration and The E.P. Systems Group, Inc. for a “Review of Economic Development Literature and Practice in Reclamation and Economic Regeneration of Brownfields.” It draws on the practical experience of its authors and a broad literature that spans scholarly and policy analysis, state and federal guidance and application materials, trade journals, manuals and case studies relating to the problems of brownfield redevelopment.

Our purpose is to demystify the mass of legalistic, technical, and often contradictory or out-of-date writings on the brownfields issue. Our goal is to inform the local economic development organization (EDO) or municipal agency charged with economic and/or community development in an area with potentially contaminated sites. Thus, we are not directing the discussion toward academics, the legal staff of firms engaged in brownfields litigation, or public policy specialists.

Federal and state agencies have worked to stimulate new EDO efforts on brownfields regeneration. These organizations see economic potential in brownfields redevelopment and have responded to local agencies’ perceptions of such projects as “impossible” or difficult, and thus low priority, activities. We hope this review will assist EDOs in understanding, but not exaggerating, the problems—and the broad-ranging community benefits—associated with brownfield projects. This review should help to identify workable approaches to potential land contamination issues, point to the best practices of successful brownfield redevelopers, and identify sources available for EDOs about to launch or expand their own brownfields efforts.

We wish to thank the practitioners, policy analysts and researchers whose prior work on the brownfields redevelopment process has enabled the field to progress and helped make reclamation of these sites easier for those localities and organizations that are following their lead. In particular we want to thank Charlie Bartsch of the Northeast-Midwest Institute, arguably the dean of brownfield policy analysts, for his input and support, and Kelly Robinson of the Economic Development Administration, who went beyond the role of Project Officer to actively contribute to the framing and conceptualization of this review and synthesis of literature and experience.

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INTRODUCTION

In the past decade, a great deal of attention has turned to the redevelopment of brownfield sites, defined by the Environmental Protection Agency (EPA) as "abandoned, idled or underutilized industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived contamination" (66). Some of these complications arise from the nature of the sites themselves; others from the types of settings in which the sites are located; yet more from actual contamination or from the stigma associated with a site that just might be contaminated; and a very large percentage from the legal and financial environment in which such redevelopments must occur. Despite these potential problems, there is great interest in reusing these sites because:

- ! from a private sector perspective, their location may offer exceptional profits from successful redevelopment, and,
- ! from a public sector perspective, their redevelopment may contribute to both the economic and community development goals of the municipalities in which they are located.

As a consequence of the interest, a rather large literature about the redevelopment of the sites has been generated.

For the proactive municipality, local development agency, or other economic development organization (EDO), there are many reasons why brownfields redevelopment is an essential component of the economic development process. In many cases, the municipality simply has no other available land to consider for plant locations and expansions within its boundaries. In other cases, the sites may be strategically critical to a broader regeneration effort, such as when they are located in the middle of a redevelopment area. The alternative to redeveloping previously used sites is to see all new local economic activity generated outside the municipality. Redevelopment, then, provides a means of creating jobs, increasing the local tax base, and maintaining an inventory of useable land, even in the absence of immediate demand. Such sites also may be desirable for the local government or EDO because the public sector costs of building and maintaining sewer, water, and transportation infrastructure are lower within areas that are already built up (80).

Conventional wisdom argues that the costs and risks associated with the reuse of these sites makes them uncompetitive with "greenfield" development. The obstacles to the redevelopment of brownfields are real. However, recent experience demonstrates that, despite the problems, brownfields redevelopment is possible and rewarding. Our purpose here is to use the literature to show how the obstacles to redevelopment can be—and are being—overcome.

Given the volume of material now available, we have had to limit the scope of this review. We opted to emphasize the documents and analyses that we thought would be most immediately useful to the typical EDO trying to address its brownfields situation. Timeliness is important.

Much of the earlier material has been superceded by new work or has been made obsolete by new State and federal legislation and tools such as environmental insurance. However, some seminal conceptual framing was undertaken early in the public debate on brownfields, and we have included that material.

By and large, we have omitted descriptions of single city or state programs because their generalizability to other contexts is uncertain. Imitation, without detailed consideration of the specific context in which successful projects proceeded, is dangerous at best. While we offer case study examples in Appendix B, they are cases discussed by authors trying to offer guidance for possible replication in other contexts.

We similarly have made only passing reference to a growing body of literature proposing smarter growth or more environmentally sensitive (“sustainable”) redevelopment. This is an important set of issues and prospects for reuse and should not be ignored, especially in light of the potential longer term economic benefits. However, the more fundamental problem for the vast majority of EDOs that have yet to launch systematic brownfields programs is how to initiate and direct such efforts, not how to tailor them to specific environmental ends that may constrain investment options. Likewise, we have not systematically addressed the brownfield regeneration experiences of community development corporations and other organizations with a particular or special agenda and unique legal mandate.

Our overall objective in this literature review is not to offer a guidebook or attempt any step-by-step guidance. There are many manuals of this sort already available as references and we offer summary descriptions of some of them in Appendix A to assist selection of brownfield redevelopment tools by interested EDOs. Our intent is to provide some guidance and an overview of the issues that EDOs need to address in framing their individual brownfields programs.

THE POLICY CONTEXT FOR BROWNFIELDS REDEVELOPMENT

The reuse of previously developed land is not a new practice. Archeological evidence suggests that the cities of the ancient world have been built time and time again on the same sites. In this country, the older cores of the colonial and pre-industrial cities have evolved in place from pedestrian oriented, small scale, mixed land use shopping and living places to places dominated by skyscrapers and monolithic government structures. The “federal bulldozer” of Urban Renewal in the 1960s deliberately sponsored redevelopment of the urban cores (69). Therefore, urban areas and their economic development organizations have had many decades of experience with the intentional reuse of land within their boundaries. Why then is there an entirely new literature devoted to the reuse of industrial and commercial sites in these same cities? The answers to this simple question are multiple, complex, and interrelated.

Although cities, and to a lesser extent other areas, have been reusing land for many years, the context for this reuse has changed over time. Plant closings and downsizing associated with the restructuring of the US economy from the 1970s on have left underutilized and potentially contaminated sites, commonly called *brownfields*, in most communities (18). The sheer number of these sites is impressive. The general consensus is that there are a least 500,000 sites that are suspect with respect to their environmental conditions, in terms of known past uses and current status (18, 33, 39, 114). Growing environmental awareness over the past two decades has led to the belief that most of the sites that were used for industrial operations prior to 1980 have some contamination that needs to be addressed, but this accepted “fact” has not been verified (40, 52 64).

When Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA or Superfund) in 1980, it intended to facilitate reclamation of acutely contaminated, but neglected sites. Unfortunately, while CERCLA has had many beneficial environmental impacts, it has also had several unintended negative impacts on economic development, in part because of court interpretations of the Act (34, 43, 105, 107). The Superfund itself is focused on fewer than 1410 sites, but the publicity it has generated has undermined the perceived value of 500,000 or more brownfields across the nation that may have minimal, if any, contamination (33, 85, 114).

The primary negative consequence for economic development under CERCLA derives from the fact that the current land owner (as well as all past land owners) may be held responsible for any environmental problems (and are considered to be “potentially responsible parties,” or PRPs) on a site even if the contamination occurred before the current owner purchased the property (57, 58). The liability concerns have been of great interest to both private and public sector developers since the passage of CERCLA. The problem for redevelopment posed by CERCLA stems less from the cleanup or procedural regulations imposed by the law than from the complex legal liability system that comes into play for any site with even a small amount of contamination (38). Of particular concern are the principles of “strict” and “joint and several” liability.

“Strict” liability does not require the demonstration of any wrong-doing. This means that even if the contamination actions taken were legal at the time they were done, a party may still be held accountable for the costs of clean-up and environmental damages. This liability is also retroactive, meaning that even if the pollution occurred prior to the passage of CERCLA in 1980, one may still be held accountable. “Joint and several” liability comes into play when there are several PRPs, and means that any one or all of the parties who might be even remotely associated with the pollution may be held responsible for the entire cost of clean-up. CERCLA creates three general classes of responsible parties: generators of the hazardous substances found at the site, owners and operators of the site, and transporters who have the authority to select the site for disposal. The courts have held that any of the three classes of parties may be held liable for the entire cost of site cleanup, unless it can be shown that the harm is "divisible" (for example, where there are two or more physically separate areas of contamination). This ambiguous potential liability resulted in situations in which even those who in no way caused the contamination, or who acquired title when they did not want to (as in the case of loan defaults, inheritances, and tax delinquencies) experienced exposure to some risks (17).

This potential liability has assured that virtually all previously used industrial and commercial sites require an environmental assessment before they can be sold and before financing can be obtained for their redevelopment (84, 101). The effects of the regulation on redevelopment are to make it:

- ! more expensive (because of assessment and cleanup costs),
- ! riskier (because of the possibility of greater contamination than originally conceived),
- ! slower (due to the time necessary to assess the levels of contamination, clean the property, and obtain appropriate clearances).

Finally, prior to 1996 legislative changes, court interpretations of the ambiguous CERCLA language made financing redevelopment of brownfields more difficult by exposing financial institutions to liability under certain conditions (18, 84, 93, 106). The net result has been to reduce demand for any previously developed sites.

In addition to environmental concerns (and the associated regulatory, liability, and financing issues) brownfields redevelopment has been slowed by weak demand for developed sites more generally (82, 114). A number of different trends often combine to pose a challenge to attracting redevelopment to abandoned industrial sites (108, 116). These include:

- ! the physical and economic deterioration of older industrial areas in recent decades,
- ! population out-migrations,
- ! common public sector neglect of infrastructure and service delivery in depressed areas,
- ! changes in preferences for production and distribution facility types (e.g., increased demand for single-story buildings), and

! higher business demands for access to the interstate highway system as reliance on river and rail transportation has declined, leading to shifts towards suburban locations near highway interchanges.

Conversely, greenfield sites (i.e. previously undeveloped properties) are usually in higher demand areas, are cheaper to develop per acre, and present far less risk and uncertainty (113).

In the 1970s and 1980s, local governments and economic development organizations (EDOs) consequently found themselves in a situation where they had many potentially reusable sites, but little private sector interest in redeveloping those properties and significant obstacles to public sector-led redevelopment (73, 83). The situation has changed dramatically in the 1990s with the emergence of state Voluntary Cleanup Programs and more flexible cleanup standards based on intended site reuse. Other new developments include different forms of liability relief for owners who clean their sites, for project financiers, and for innocent new purchasers (and inadvertent inheritors or acquirers) of previously contaminated sites (5, 29). Federal and state financing support for local projects has also become more available, and existing funding programs have been modified to promote brownfields redevelopment. Finally, private sector insurers have developed new risk-management products that reduce risks and liability concerns for many parties involved with brownfields regeneration (47, 88, 91).

Local communities and EDOs have many reasons to want to redevelop brownfields despite the obstacles involved. Not only may such redevelopment promote new economic activity and jobs, but it also helps to reduce negative neighborhood spillover effects. Without redevelopment, many such sites become “attractive nuisances,” providing locations for drug-related or other undesirable activities. Moreover, businesses and residents in the areas immediately adjacent to brownfields often suffer lost revenues and declining property values due to the stigma associated with pollution. This is especially problematic because brownfields are often located in older areas with low income and minority residents suffering from economic decline and environmental justice problems. EDO redevelopment planning, if based on traditional industrial development approaches with minimal community consultation and input, however, may raise similar environmental justice concerns associated with cleanup standards and proposed new land uses.

The benefit of redevelopment of brownfields extends beyond the site itself to the wider community (33, 64, 86, 125). Redevelopment of brownfield sites in poor areas offers many opportunities including:

- ! the possibility of new employment for local residents,
- ! reduced risks from past contamination and a lower likelihood of additional pollution,
- ! increases in the tax base associated with new activities and,
- ! increased attractiveness of the community at large to other new businesses.

Hence, when measuring the costs and benefits of brownfields redevelopment, the public sector should look beyond the site-specific impacts to consider the broader community impacts as well (63, 74, 105). Many of the case studies profiled in Appendix B offer descriptions of the wider community benefits associated with such projects.

THE COSTS AND BENEFITS OF BROWNFIELDS REDEVELOPMENT

CERCLA is ostensibly based on the “polluter pays” principle. To the extent that the law implements this principle, the costs of brownfields redevelopment should be borne by the parties that generated the contamination, if they are present and can be identified. In fact, the costs of past contamination and of any delayed redevelopments due to pollution concerns are imposed on many more people than the PRPs that the law enumerates.

Because CERCLA imposes joint and several strict liability for cleanup and for any damage done by past contamination, the costs of cleanup may be borne by property owners that acquired a polluted site unknowingly after it became contaminated but before buyers learned to be sensitive to possible environmental problems. In the period since widespread public awareness of contamination emerged, buyers are more likely to include pollution considerations into their decisions. Some new owners may have purchased sites at deep discounts because of environmental conditions and thus cannot be considered innocent; they may appropriately be burdened with a share of the cleanup costs. Other buyers may not be well enough informed to do sufficient “due diligence” in determining environmental conditions when sellers intentionally hide the extent of pollution on their sites. Still others inherit property, or acquire title as the result of foreclosures on bad debts, and may have had no opportunity to conduct any site assessments prior to becoming owners, and thus PRPs under CERCLA. In states that have automatic title transfers to municipalities in the event of tax delinquency defaults by private landowners, many local governments become PRPs through just this process.

The 1996 Asset Conservation, Lender Liability, and Deposit Insurance Protection Act provides protection for some of the “bona fide new purchasers” and others who may have acquired title through inheritance, gifts, or legally required tax foreclosures. The Act also protects lenders foreclosing for purpose of resale to recover on loan defaults (122). Many of the state programs discussed below expressly exclude any federally liable PRPs from participating in their VCPs and obtaining liability relief. This sort of provision may be appropriate for the parties who actually contaminated the sites, but seems less rational for many of the parties that could become PRPs under court interpretations of CERCLA. The economic rationale for EDOs or others subsidizing mitigation costs for such owners depends on a number of different factors, including, (1) site conditions, (2) current real estate market valuations of the location and other site factors, and/or even (3) non-market public interests served by a successful redevelopment. A subsidy may not be warranted regardless of these considerations if the property purchase price discount is greater than the expected costs needed to address the contamination.

Ironically, brownfield assessments and cleanups can impose unexpected costs on property owners in the neighborhood of contaminated sites (78, 79, 104). If property values are not already depressed by suspicions of contamination, and a site is found to be contaminated, property values nearby may fall. Of course, if property values have been reduced by pollution concerns and a site is found to have little or no environmental problem, adjacent properties may rise in value. Beyond these two obvious

situations, the impact of any effort to start reclamation, that is, the first site assessment, cannot be predicted, but it is clear that the effects of redevelopment efforts on any one site will be felt beyond its boundaries. While completion of state-approved cleanups might be expected to raise the value of adjacent or other nearby property, these external or “spillover” effects depend on the types of new land uses and the extent of community acceptance of the redevelopment project. Clearly, failure to mitigate known brownfields also may impose environmental and public health costs on neighboring property owners and residents, intensifying environmental justice problems (25).

Wider recognition of spillovers is one reason that local brownfields redevelopment is increasingly pursued as part of a neighborhood or area-wide strategy, rather than a site-specific strategy. Financing approaches such as tax increment financing (TIF), that borrow against the additional taxes generated by a project, have the potential to raise more capital if impacts beyond the site are considered due to the larger tax base covered if off-site effects are included (70). But the real reason for taking more of an area-wide approach to considering brownfields redevelopment is that the impacts of abandoning—or reclaiming—such sites are felt across a metropolitan area or regional real estate market (44, 86, 97, 126, 144). The very presence of brownfields can undermine the economic competitiveness of a region by damaging its image and making it less attractive than it otherwise would be. As urban or town centers hollow out, commuting distances grow, sprawl takes farmland and open space, major investments in infrastructure are required to serve new areas while existing infrastructure in developed areas is underutilized and thus its maintenance is underfinanced and inadequate (26, 46, 80, 102, 111). More subtly, a region’s inability to address its brownfield problems—conditions increasingly understood to be solvable—may make its EDOs appear ineffectual.

Whether environmental priorities or metropolitan and state economic interests lead the decision-making, there is a growing recognition that brownfields reclamation and redevelopment provides widespread benefits. The economic value of simply turning brownfields into parks is recognized by organizations as diverse as the Urban Land Institute (51) and the Trust for Public Land (117, 118). The National Conference of State Legislatures maintains a growing inventory of “State Incentive-Based Growth Management Laws” (87). The expansion of such efforts implicitly recognizes that urban expansion is costly and that there are broad economic benefits available from reuse and redevelopment of idle lands such as brownfields, a view with which the National Association of Development Organizations appears to concur (86). Similarly, the American Planning Association’s ongoing overview of planning for the new century (3) offers strong evidence of growing political and economic commitment to creative, community-serving denser development—a form of economic growth that depends on brownfields reuse.

Evidence is growing that, at least in the current economic and regulatory climate, brownfield investments are a cost-effective and efficient means of pursuing local economic development (125). A growing number of private developers and venture capital firms are investing in brownfields, recognizing that they can be highly profitable (81). More generally, the financial benefits of brownfield investments are becoming more obvious to a broader audience of public and EDO officials. The Council for Urban Economic Development (CUED) recently completed what appears to be the most comprehensive study to date of brownfield project economic features (39). Examining 107 very diverse types of completed projects, they found that cleanup costs averaged only 8 percent of total project costs, median public costs

per job created were \$14,003, and every \$1 public sector dollar invested leveraged an additional \$2.48 in private dollars (with half the public money coming from non-local sources). In short, brownfields appear to offer good EDO investment opportunities. CUED also examined the skills needed to undertake brownfields redevelopment. They found that critical capacities include site assembly (where there are many small parcels of land), and the ability to package the financing, using federal and state funds as well as attracting private investment. These, of course, are skills central to any EDO, and suggest that EDOs can make an important contribution to cost-effective local brownfields redevelopment efforts.

ISSUES OF RISK AND UNCERTAINTY ON BROWNFIELDS

Due to both the lack of information about actual contamination and the broad liability exposures generated by CERCLA, brownfield projects pose exceptional risks to investors, relative to efforts to develop greenfield sites (11, 32, 56, 113, 120). In fact, the *risks* associated with brownfield redevelopments are generally understood. The major problem encountered in such projects involves *uncertainty* over the likelihood that the potential costs will arise and the amount of money they may involve (24, 48, 71, 77, 104). Investors can accommodate risk, provided it can be quantified: they simply accept only those projects that promise higher, “risk-adjusted” returns on their investments. If, however, reliable quantification of risk is not possible, then determination of the needed risk-adjusted rate of return is impeded. Not having firm numbers, investors may simply abandon projects—or only pursue those with truly exceptional returns. Thus, it is the uncertainty associated with brownfields, even after completion of extensive site assessments, that can pose a major barrier to redevelopment.

Following the promulgation of CERCLA, there were no firm EPA guidelines for determining the extent of investigation necessary to identify and assess the extent of contamination (93). The American Society for Testing and Materials (ASTM) developed such guidelines starting in the mid-1990s. Its standards are now readily accepted (7, 8, 9). Unfortunately, many brownfields stakeholders and decision-makers are not aware of this development and thus tend to exaggerate the uncertainty with respect to both in-ground contamination and enforcement liability that remains after a site assessment that meets the ASTM standards. Moreover, EPA has indicated that it is not routinely pursuing brownfield redevelopers voluntarily executing cleanups enforcement action, and this stance further reduces the uncertainty over Agency actions (129).

Wide-spread lack of understanding of the reduced enforcement risks, however, means that brownfield investment uncertainty continues to be perceived as higher than it actually is. Overstated uncertainty, combined with slow dissemination of information about innovative cost-effective cleanup or containment techniques, has prevented potential developers from recognizing that profitable investment opportunities exist. At the same time, a handful of knowledgeable for-profit redevelopers have reaped exceptional returns on selected brownfield sites (81).

Financiers can make loans on risky property, within reason, or even take equity positions in development efforts, provided they are able to quantify and make allowances for their risk exposure through higher interest rates, reserve accounts, inclusion of more secure collateral or similar approaches (144). In fact, even commercial banks, assumed by most observers to be far more risk-averse than developers, were beginning to learn how to deal with brownfields before the 1996 legislation that limited lender liability (21, 27, 55, 93, 106). As a result, passage of the Asset Conservation, Lender Liability, and Deposit Insurance Protection Act has had less impact on the availability of debt capital for brownfield redevelopment projects as had been anticipated.

Access to capital was found to be a major barrier to brownfields redevelopment in case studies gathered prior to the passage of the Act (120) and it remains a problem today (13).

The continued relatively tight brownfields capital market appears to be due to a number of different factors:

- ! brownfields are often in neighborhoods with many problems other than contamination, including poor infrastructure or transportation access, crime, and related ills (23, 97, 120, 121);
- ! for a variety of reasons, urban land is often less in demand than suburban or exurban sites, even in the absence of the complicating factor of possible past contamination (20, 23, 96);
- ! federally financed highways and other infrastructure development, along with tax policies and other public policies, have tended to subsidize development of previously rural and suburban land for decades, placing all urban land, and especially brownfields, at a further competitive disadvantage (65, 102);
- ! most brownfield sites, even those only suspected of having contamination, are given valuations by appraisers that may exaggerate risks or costs, and thus face reduced access to debt capital from institutions with prescribed “loan-to-value” ratios designed to limit the risk exposures they accept (30, 94, 104); and,
- ! continued investor concerns about project viability and stability of cash flow for loan servicing, whether or not accurate in the changing investment climate, limit the willingness of lenders to fund, regardless of property valuations (11, 46, 56, 112).

These last two factors are associated with the approaches taken to valuation of property by professional real estate appraisers. In the extremely litigious environment generated by CERCLA, appraisers understandably have been fearful of being sued for over-valuing sites that may be difficult or expensive to clean (6). Using a sales-comparison approach, appraisers have lowered valuations of brownfield sites in order to make allowances for massive uncertainty arising from the difficulty of finding properties that really are comparable (94). Similarly, when appraisers have tried to estimate brownfield values based on the potential revenue streams from the properties (the income approach to valuation), they have often double-counted the risks associated with brownfields. It is common procedure to subtract costs attributed to environmental factors from the projected income stream while simultaneously increasing the discount rate to accommodate uncertainty (31, 78, 104). Appraisers have also tended to assume that brownfield property values will be depressed by the stigma attached to these sites, even after they have been cleaned and government certifications and approvals have been obtained. In reality, there is little or no credible evidence of such a “stigma effect” (42, 115).

While appraisers tend to discount excessively for stigma, they are correct in their perception that there are exceptional risks associated with projects on sites that need to be remediated. Three major risks confront investors in contaminated sites that are not present in other development projects:

- ! possible cost (and time) overruns in cleanup or containment operations;

- ! possible liability claims arising from accidents or exposures to contaminants in the past or during the cleanup; and,
- ! future uncertainty about community acceptance of the site redevelopment (leading to changes in marketability of the site, restrictions on acceptable land uses, and possible additional cleanup requirements).

While developers appear to be increasingly willing to incur such risks, they tend to do so with other peoples' money—and thus are constrained by appraiser and lender conservatism with respect to brownfields (56, 81, 145).

Due in part to the combined effects of the 1996 Act providing partial relief from joint and several liability under CERCLA, the 1995 modification of the Community Reinvestment Act to provide credits for brownfield investments, and the accumulation of experience with successful projects, banking institutions are now more willing than ever to lend on brownfields. Still, there are costs associated with this new financing. Banks require brownfield borrowers to demonstrate higher levels of “due diligence” and loans are typically made at higher interest rates, reflecting continued concerns about exceptional risks, not the least of which is that a borrower whose capital is depleted may default without a cleanup (90, 98). Furthermore, many traditional lenders remain constrained by regulations regarding acceptable risk exposures. Most banks cannot provide funds for brownfield projects with loan-to-value ratios over 75 percent. There is also some evidence that recent bank mergers may be reducing the supply of capital for local projects that have community value but cannot compete with global investment opportunities offering higher investment returns (13, 82). Combined with the ongoing problem of low appraisals, it is possible that some degree of capital starvation for prospective brownfield redevelopments still exists. There are a number of potential responses to this problem, one of the most promising of which is environmental insurance.

The emergence over the past five years of insurance coverage for the exceptional risks associated with brownfields has the potential to significantly change the prospects for redevelopment efforts (4, 47, 88, 92). Three different types of policies have emerged, each with its own set of options and conditions, and each playing a different role in supporting brownfields redevelopment by capping and quantifying risk for investors and their financiers (91):

- , **Cleanup Cost Cap** policies protect against cost-overruns on pollution containment and removal actions. These overruns may result either from unexpected costs to address known conditions or from contaminants not identified when the cleanup was designed and approved. The policies normally can be acquired for a short time period, since they are intended to cover the actual period of remediation. Some cleanups, such as those that rely on phytoremediation (using plants to gradually neutralize toxics in the soil) or those that involve extended pump and filtering operations (for contaminated groundwater), may require longer term policies.
- , **Pollution Liability** policies provide the insured party with protection against lawsuits involving any of the special brownfield risks, regardless of the claimant, and includes coverage for both damages and legal defenses against lawsuits. This form of coverage is usually acquired for an extended period. Policies may be written so that successive owners inherit the protection and

are constructed to cover both regulatory agency and third party claims. This extended protection contributes to maintaining the value of the property in successive transactions, despite its possible history of past contamination.

, ***Secured Creditor*** policies protect lenders against loss of principal for brownfield loans in the event of defaults, eliminating any need for foreclosures. These policies do not protect developers or new owners from risks, so other forms of coverage may be needed by those undertaking redevelopment if they have concerns about their liabilities. The policy term purchased is generally the term of the loan. Banks and other lenders can buy policies themselves, passing the cost on to borrowers, or may demand that borrowers obtain coverage as a condition for lending.

Insurance is a vehicle for transferring risk and uncertainty. If premiums are not excessive, and if the coverage is appropriately designed for the specific brownfield project, insurance can address exceptional project uncertainties that are due solely to questions about environmental conditions (4, 79). There are two main problems for EDOs wishing to acquire insurance. First, these policies are “manuscripted,” written with language and provisions for each site or project individually. Accordingly, they are very complex, making it essential that EDOs obtain advice from environmental insurance professionals who protect their interests and those of successive owners. Second, the vast majority of brownfields are too small for Cleanup Cost Cap insurance to be cost-effective for a single project, although Pollution Liability coverage may be efficient.

At present, the cost-effectiveness of any of the coverages available is related to project size more than to the type of contamination problem involved. Given the high fixed costs of underwriting and manuscripting, the individual project cost cap environmental insurance available today is considered to be efficient only for sites with a minimum of \$100,000 to \$500,000 in cleanup costs (91). Some states and insurers are beginning to address this problem through group coverages. Lenders that buy their own coverages may acquire insurance for a portfolio of loan holdings. For large EDOs or groups of smaller ones willing to negotiate group policies with insurers that cover a number of different sites, environmental insurance could prove to be an exceptional opportunity to enhance the market valuation of brownfields and attract new investment (92).

THE ROLE OF ECONOMIC DEVELOPMENT ORGANIZATIONS IN SUPPORTING BROWNFIELD PROJECTS

The major state and national initiatives currently in place, discussed below, can provide important funding for local brownfield redevelopment efforts. The fifteen agencies participating in the Federal Interagency Working Group on Brownfields offer a variety of support, but they are not the only sources of federal funds and technical assistance available. EPA programs are the most obvious, but other federal funding sources may offer larger pools of money and assistance. There also are special tax provisions available intended to assist regeneration of brownfield sites (127, 128). In some instances, the federal funds available are not specifically earmarked for brownfields and require creative use for redevelopment purposes (12, 135). In other cases, longstanding policies have been modified to promote brownfield investments, but limited publicity about these resources has left them underutilized (10, 134).

The availability of funds varies among the states, but in every case EDOs need to be creative and to look beyond the obviously applicable economic development and environment agencies (14, 38, 40, 48, 52, 59, 87). As at the federal level, funds for community development, training and manpower development, and neighborhood health may all be incorporated into a brownfields project financing package (112, 124, 128, 131, 138, 142). The key issue for EDOs is one of defining a role for themselves in brownfields redevelopment and acting on it. In light of the breadth of funds potentially available, development organizations that adopt area-wide approaches that expressly pursue wide public benefits, not merely increased private property values, will be best positioned to acquire the funds they need to promote brownfields redevelopment.

Overstatement of risks and uncertainties, combined with undervaluation by appraisers can starve projects of capital (78). The well-capitalized private brownfield redevelopment firms indicate that they need available sites of at least 5 acres—more commonly over 20 acres—before they commit resources even to investigate investment opportunities (81). Consequently, the vast majority of small manufacturing, retail and residential sites (many under 0.25 acres in size) may be effectively excluded from most sources of private capital (145). While small developers may be anxious to take advantage of the depressed prices on these properties, they have great difficulty obtaining necessary financing (28, 120, 145). EDOs can play a critical role in helping to clean and redevelop these properties neglected by mainstream financial institutions. The key to successfully developing these smaller sites is to recognize that the otherwise scattered brownfields do not exist in isolation, but are part of a neighborhood or local area (3, 50, 61, 86). Brownfields redevelopment, then, is often a key component of any municipal “growth” or similar program, and is similarly central to regeneration efforts in both rural and urban Enterprise Communities and Empowerment Zones (65, 86, 110, 125).

Site assembly—which may involve combining brownfield parcels with other sites that are not environmentally impaired—may be another important activity for EDOs. This has been a key element of many EPA Brownfields Assessment Demonstration Pilot project work plans (13, 113).

Such larger parcels involve a higher total redevelopment investment than would a small site, so any cost of cleanup is “diluted,” and becomes a smaller percentage of the total project cost (120, 145). Larger parcels may also attract more developers, since many operate with minimum scale constraints (81). Community impacts are key considerations in utilization of HUD CDBG and Section 108 funds for brownfields regeneration, and these resources have also been used for site assembly in order to attract private capital as well as to broaden local regeneration effects (103).

There may also be an important role for EDOs in creating groups of small brownfield sites for the purpose of obtaining affordable insurance coverage (47, 92). Such a group has been created as part of the Massachusetts brownfields redevelopment efforts (1, 2). However, it remains to be seen if individual municipalities can include enough brownfield sites to obtain coverage for a portfolio of sites or projects that is both profitable to underwriters and cost-efficient for purchasers. Even if a large enough group can be formed, many EDOs and municipalities may not have the capacity to function efficiently as insurance purchasers. Insurance underwriters and brokers note that they face exceptional difficulties in selling to such bodies in light of provisions for public disclosure of bids (which would expose their manuscripted policies to their competitors’ scrutiny) and organizational structures that often separate the purchasing or risk management operations from the offices that have expertise in brownfields and their complex insurance needs (47, 92).

Another key factor in redeveloping brownfields is vision on the part of the EDO. This vision may be constrained by current zoning and land use plans, but creative reuse requires thinking “outside the box,” or, at least, outside individual sites themselves. EDOs need to treat rezoning and major changes in local land uses as viable options in their planning. Similarly, they cannot afford to overlook the possibility that off-site infrastructure investments and other nearby projects undertaken for traditional development purposes simultaneously could improve the investment attractiveness of brownfields. In many instances, such off-site investments may be easier to implement than brownfield-specific projects, but they may result in redevelopment of previously contaminated sites and thus provide more return for the investment of public funds. Site assembly and creation of new urban industrial parks may be one appropriate response to scattered brownfields (41). On the other hand, the prevalence of small brownfields may provide prime opportunities for new residential construction in neighborhoods that desperately need more affordable housing. In some instances, the best use for large parcels may be conversion to individual housing lots after completion of site mitigation (143).

The extensive experience reported in case studies and statistical analyses of brownfield redevelopments completed to date attest to the breadth of possibilities:

- ! Conversions of industrial lands to residential uses are growing.
- ! Small sites are being developed independent of major government interventions.
- ! The new climate of flexibility is permitting productive reuse of many sites that were previously considered impossible to regenerate (39, 59).

Local economic development organizations have a new opportunity to contribute to regeneration, job creation, and new public facilities through the remediation, reclamation, and reuse of brownfield sites.

FEDERAL AND STATE PROGRAMS

The economic and environmental benefits of redevelopment of brownfields have been widely recognized by relevant federal agencies and state governments. At the federal level, at least fifteen different agencies offer programs and policies that may be relevant to brownfields redevelopment. At the state level, programs differ tremendously—and the individual approaches are very important to local redevelopment planning within each state, so it is essential that local efforts coordinate with state environmental and economic development agencies. Below, we first review major federal programs and then describe some of the key features of the state programs.

Federal Brownfields Redevelopment Initiatives

Federal recognition that brownfields redevelopment is more than just an environmental issue is reflected in the 1995 launch of the Brownfields Economic Redevelopment Initiative, under which, by July 2000, EPA had awarded pilot grants to close to 400 state, local and tribal organizations for projects to stimulate cleanup and redevelopment of brownfields (131). The Federal Interagency Working Group on Brownfields, created in 1997, involves fifteen different federal government agencies. The group was formed to better integrate national support for mitigation or containment of pollution to permit economic redevelopment of previously used sites (132). Some key federal initiatives, program authorities, and targeted funding streams that may affect brownfields redevelopment are described below. Appendix C provides a similar list with World-Wide Web addresses (URLs) for the relevant agencies.

Environmental Protection Agency

Brownfields Assessment Demonstration Pilots (generally known as Brownfields Pilot Projects). This grant program was motivated by the fact that many local redevelopment agencies were writing off large portions of their land assets as irretrievable. The diverse experience of more than 300 Pilots has produced useful guidance on how to launch a brownfields redevelopment effort or add such a thrust to on-going local economic development efforts. Actions undertaken by the Pilots demonstrate that the use of the seed funds is limited less by EPA requirements, which are very broad, than by the imagination of the agencies launching programs (60, 141). Funds have been used for individual site assessments, area-wide brownfield database development, and special programs to involve community members in brownfield site redevelopment planning.

The Asset Conservation, Lender Liability, and Deposit Insurance Protection Act, passed in 1996, provides protection for lenders and certain other parties from the risks associated with participation in brownfield projects. The Act did not provide any new federal program, but formalized a prior EPA rule on lender liability that the banking sector did not trust because it was not legislated. The impetus for the passage of the Act was the problem caused by lenders' fears of the liability risks that severely limited

access to debt financing for those involved with brownfields (101, 109, 122, 145). As lenders become more comfortable with the Act, it may eventually free up more capital for brownfields redevelopment.

Brownfields Cleanup Revolving Loan Funds, each capitalized with up to \$500,000, allow state, local and tribal agencies to make loans to developers that facilitate cleanups (136). These funds help fill a financing gap created by the fact that, despite legislative and regulatory changes, commercial lenders remain hesitant to provide funds using brownfields as collateral, unless the sites have been cleaned. Non-traditional sources of debt capital to pay for cleanup thus may remain essential, even for projects for which the risk-adjusted returns on investment are extremely attractive to a developer.

Job Training and Development Demonstration Pilots provide up to \$200,000 over two years, to address the environmental justice and economic inequality issues presented by brownfields (138). These grants may be used for environmental employment and training for residents near environmentally impaired sites to augment the community benefits of brownfield redevelopments.

Department of Housing and Urban Development

Community Development Block Grant (CDBG) Program for revitalization of decaying neighborhoods dates to 1974. Both CDBG and Section 108 Loan Guarantee Program funds were used for brownfield projects long before the formation of the Interagency Taskforce on Brownfields. Cleanup of brownfields was specifically defined as an eligible use of CDBG funds in the 1998 legislation. Based in part on earlier experience with use of CDBG monies for redevelopment, HUD has provided guidance to grant and loan guarantee recipients on the benefits to be gained from targeting brownfields for regeneration (103).

Brownfields Economic Development Initiative (BEDI) provides a total of \$25 million annually (for FY 2000) to stimulate local efforts to regenerate brownfields. All BEDI applications must be accompanied by a request for new Section 108 Loan Guarantee authority and must advance one or more of the CDBG program objectives of benefitting low and moderate income persons, preventing slums or blight, or addressing imminent threats and urgent needs.

Department of Commerce, Economic Development Administration (EDA)

The Economic Development Administration provides a variety of assistance to help communities develop and implement local economic development strategies. The agency has supported redevelopment of old industrial sites for at least 25 years. In fiscal year 1999, EDA provided approximately \$63 million for brownfields redevelopment (124).

Planning Program involves the ongoing EDA funding for economic development planning for 320 Economic Development Districts and 70 Tribal Planning Organizations. These funds may be used to integrate brownfields redevelopment into broader economic strategies known as Comprehensive Economic Development Strategies (CEDS). Localities must have a CEDS in place to receive Public Works or Economic Adjustment funding. Plans developed for other federal agencies may, in many cases,

serve as an EDA CEDs. The average grant size in FY 1999 was \$54,000 for Economic Development Districts.

Public Works and Economic Development Program funding may be used to provide infrastructure for a site, rehabilitate buildings after a site is cleaned, or other similar “bricks and mortar” activities. Typically, EDA does not fund remediation activities, although funds have occasionally been provided to remove lead paint and asbestos. The average grant size in FY 1999 was \$829,000.

Economic Adjustment Program funds are targeted at areas suffering from long-term distress such as economic restructuring or shorter term challenges such as plant closings and natural disasters. Specific funds are also available for Defense Economic Adjustment in areas of base closings, although the availability of these funds is expected to decline unless further rounds of base closings are announced. Economic Adjustment funds may be used for bricks and mortar activities, planning, and for funding locally administered revolving loan funds (RLFs). The average grant size in FY 1999 was \$175,000 for non-defense and \$1.27 million for defense adjustment.

Local Technical Assistance funds are available to fund feasibility studies, market analyses, and similar small projects necessary to support site redevelopment. Funding under this program is very limited and the average grant size is only \$28,000.

Other Federal Programs and Resources

National Oceanic and Atmospheric Administration (NOAA) Coastal Zone Management Program supports land acquisition and mitigation activities for sites adjacent to waterways or coastal areas. These are not general shoreline economic development funds but are targeted to areas that may have contamination threatening coastal waters.

Department of Health and Human Services (DHHS) Social Services Block Grants may be used to provide funds for job training related to brownfield cleanup efforts in Empowerment Zones and Enterprise communities. DHHS also has a number of programs that, while not focused on brownfields, may be important to redevelopment efforts. Among these are the health studies on environmental exposures conducted by the Agency for Toxic Substances and Disease Registry and the environmental job training available from the National Institute of Environmental Health Services. While these funds will not help cover the costs of cleanups, they can be important in soliciting support and participation of local communities by delivering services that benefit residents near brownfields.

Department of Transportation provides funds specifically for brownfields redevelopment under both the Federal Highway Administration and the Federal Transit Administration. The funds and resources available under the Transportation Equity Act for the 21st Century (TEA-21) can be integrated with other support to improve transportation access and infrastructure near brownfield sites. More generally, any transportation infrastructure improvements have the potential to increase property values and attract private investors to nearby brownfields.

US Army Corps of Engineers provides engineering assistance to communities in four broad areas associated with brownfields: site assessment, remediation, property redevelopment, and sustainable reuse. In each case, the Corps responds to requests from local EDOs or governments; it does not lead, unless it is assisting one of the military services to dispose of a surplus site.

Community Reinvestment Act credits can be claimed by banks for lending on brownfield projects in low- and moderate-income neighborhoods. Many banks remain unaware of the 1995 regulatory change by the Office of the Comptroller of the Currency to support brownfields redevelopment (67). Local EDOs and governments may be able to increase the flow of bank lending to brownfields simply by making sure local bank lending decisions take the availability of these credits into consideration.

Brownfields Tax Incentive allows investors to expense brownfield site mitigation costs on their income taxes in the year in which they are incurred, rather than depreciate them over time (133). The value of this tool has been limited by strict requirements that sites be located in impoverished areas that have trouble attracting capital (even to non-brownfield sites). The recovery of expensed costs in the event of resale before the expiration of the normal depreciation period further limits the value of the tax incentive to investors who intend to sell the property soon after it is redeveloped (139).

Civil Rights Act of 1994 and environmental justice issues have been of concern to redevelopers. Title VI of the Act can be invoked by community groups concerned with an unequal distribution of environmental risks and exposures across local populations. In principle, the Title thus could raise the costs of cleanups by legitimating high levels of community involvement in redevelopment planning. In practice, experience in cities with high levels of community participation in pre-mitigation project decision-making suggests that, contrary to such fears, high neighborhood engagement actually can lower development time costs over a project's lifetime (89, 137). In fact, some, locally controversial, new facilities may be possible *only* with such participation (25, 28). Furthermore, broad-based community input may *improve* both regulatory and planning processes (49).

State Brownfields Regeneration Programs

As of 1994, EPA could identify only 14 states that claimed to have developed their own programs to facilitate brownfields cleanup and reuse (99, 130). According to the generally accepted tabulations of the Northeast-Midwest Institute (14), by late 1999, 47 states had promulgated some form of what has come to be known as a Voluntary Cleanup Program (VCP). Some of the state efforts have been relatively minor extensions of the 44 "state Superfund" programs designed for pre-1995 sites posing active danger to human populations (123). Others may lack implementing or supporting legislation. Without the legislative foundation, such programs may not reduce regulatory uncertainty sufficiently to stimulate new brownfield investment.

Programs vary tremendously, with some, such as Kentucky's, providing liability relief only to public sector redevelopers. Other states, such as Illinois, Massachusetts, Michigan, Minnesota, and Pennsylvania, offer substantial linked financial assistance as well as cleanup certifications to private developers. Some programs focus very narrowly on one or another type of redevelopment or on sites only in designated sub-state target areas. However, all these state programs represent innovative efforts to reshape the local impacts of the federal approach to brownfield liability for cleanups and damage (59, 72, 123).

This expansion of state brownfield programs is a logical outgrowth of broader state innovation and competition in efforts to encourage new investment and associated economic development (53). In short, the states have redefined the brownfields problem as primarily an economic, rather than environmental issue. Planning for brownfields redevelopment, whether by private companies or public agencies, should therefore treat the state VCPs as one element of the broader state economic development effort, akin to tax preferences, subsidized loans, or grants.

In fact, the states with the most active VCPs also tend to have special economic stimulus packages targeted at brownfields, or to regions or locations that are likely to contain them (15, 59). Michigan, for example, provides special incentives to its "Renaissance Zones;" Pennsylvania has a "Special Industrial Areas" cleanup standard and other states have targeted their federally designated Empowerment Zones or Enterprise Communities or their own state enterprise zones for brownfields incentives. By linking funding packages to VCPs, states are responding to repeated reports by developers and/or EDOs that difficulty accessing capital, rather than risk or other factors, is the major impediment to brownfields regeneration (15, 59, 103, 113, 120, 142).

Most of the state VCP programs were promulgated to reduce the liability exposure of parties involved in the chain of title on brownfields under CERCLA. Unfortunately, because states are subordinate to federal legislation, a significant portion of the VCP protections are little more than reassurances: they do not protect against possible federal enforcement actions unless a Memorandum of Agreement with EPA has been signed by the state agency. One exception is provided by Minnesota, which actually offers to protect brownfield redevelopers from costs associated with federal liabilities if they clean up sites to state requirements. By and large, the state VCPs also do not provide protection against third-party lawsuits, but only against state (and/or local) enforcement actions (5, 14). Patterns and types of financial support also can vary substantially, from small loans for site assessments to major grants and 100% tax credits for cleanup costs (15, 48). Finally, not all of the VCPs include time limits for state regulatory decisions to protect developers from time delays due to oversight actions. Nonetheless, as a whole, these programs significantly improve the investment climate for brownfield reclamation projects (48).

Each of the different elements of state VCPs plays a slightly different role in facilitating brownfields reuse (5, 15, 29, 37). The key possible provisions and their relevance to brownfields redevelopment investment decisions are described below. Since VCP programs continue to evolve, the regulatory environment in any state needs to be evaluated in terms of its effects on each potential redevelopment project. Likewise, local EDOs need to revisit their state contacts regularly to be sure they are aware of the resources currently available to them (14, 59).

Eligibility. Some states (CT, KY, MA) limit the protection under their VCPs to “innocent parties,” excluding any “Potentially Responsible Parties” (PRPs) as defined by CERCLA. Other states (AR, FL, MO, PA) include all parties willing to clean up a site, and some (CO, for example) appear to target their programs to current owners who are PRPs (14). The non-PRP programs may help new owners or developers, but would not assist current owners in cleaning or preparing a site for redevelopment. Consequently, they do little to stop owners with liability concerns from holding large tracts of idle land off the market (“warehousing”) in order to avoid possible mandatory cleanup orders or damage claims. While new types of insurance coverage may eventually provide a private solution to the liability problems that lead owners to warehouse land, state VCPs can certainly help bring the underutilized sites to market by providing liability relief to PRPs (29, 59).

Participation Requirements. The severity of the warehousing problem may be tied to the extent to which participation in a state VCP really is voluntary. In some states (MA, for example), any known contamination must be publically disclosed, and the pollution forces a site into the program. In others (such as PA), site assessments that are conducted privately need not be made public even when they uncover significant pollution, so there is no pressure to enrol in the VCP. The probability that a PRP will obtain a site assessment increases with the level of privacy for the findings provided under state law. Offering privacy in order to stimulate site assessments may lead to identification and more likely redevelopment of sites with little or no contamination, or of properties on which the pollution level was found to be less extensive than prospective developers had feared. On the other hand, maintenance of secrecy may permit known risks to remain on site and may increase community distrust of redevelopment efforts.

Site Assessment Support. The state VCPs provide varying levels of technical assistance from state agencies, information from agency records regarding prior site uses or spills, or financial assistance in the conduct of brownfield site assessments. In most instances, the initial site assessment is done prior to formal application for VCP coverage. Grants or loans are the only state resource relevant to the CERCLA Phase II site assessments and preparation of remediation/containment plans that, if not completed prior to applications, are the first steps in preparing a brownfield site for redevelopment under a VCP.

Mitigation or Remediation Support. Some VCPs permit applicants to file a mitigation plan and a request for state financial aid for the cleanup simultaneously. State funding decisions, however, may be based on projected economic impacts such as new jobs, rather than the costs of addressing the known contamination. As a result, such financial support may not provide sufficient benefits to developers if they are faced with very high remediation costs. Data need to be gathered on the impact of the proposed redevelopment project, the developers have to disclose their proposed new land uses before they would otherwise do so, and there may be project delays associated with state review of the requests for site reclamation subsidies. Given that funding may not be linked to environmental conditions, the total costs of applying for such support may exceed the benefits of the public financial assistance to private redevelopers.

Liability Relief from Public Actions. Three types of state certifications are generally available under VCPs. “Certificates of Completion” (such as KY offers) simply indicate that the planned and state-approved site cleanup or containment has been executed to the state’s satisfaction. State “Covenants Not To Sue” (on which the MA and MI programs are based) promise no future state enforcement actions, but may offer no protection against private, substate public, or federal liability claims. “No Further Action Letters” (evident in the PA program) represent a formal finding that a cleanup has met the state standards, with no need for additional action, and may provide more liability relief in general, since a plaintiff would have to first show the state approval was inappropriate. Some states (MN, for example) offer all three certifications, depending on the extent of mitigation conducted. In most instances, only one or two of these so-called “comfort letters” are available (14). By and large, these certifications all include some “reopeners” - conditions under which an approval may be re-examined and additional cleanup potentially required.

Liability Relief from Third-Party Actions. Some states (PA, for example) go beyond certifying public acceptance of the remedial actions on a site: they provide state court immunity from third-party claims once the state has approved a remediation. Others (including MI) explicitly deny PRPs any protection from such suits for damages. These provisions can protect developers by limiting the rights of adjacent landowners, on-site workers, customers, or residents to claim damages. However, they also may stimulate communities to demand more active oversight of the development project.

Oversight/Approval Procedures. Most state VCPs involve at least three definable steps: (1) notice of intent to act, (2) provision of evidence on completed action, and (3) state review of the work done. Most states use environmental agency personnel to review cleanup plans and their execution. Others (notably MA and OH) rely on state-certified private environmental professionals to execute the reviews. Having private certified overseers may enable developers to accelerate oversight by paying premium fees, thus speeding the process. States also differ in the extent to which they consult with developers in preparing cleanup plans. Allowing developers to consult with regulators on plans in process may help them prepare better plans and avoid costly rejections and resubmissions. Such cooperation can also make the regulatory process more predictable for developers undertaking brownfield projects.

State Regulatory Action Time Limits. Recognizing that lost time is money, many states (including CO, MA, MI, PA, AND TX) have set limits on the time available for agencies to act on remediation plans or reports of completed cleanups. Speedier regulatory action, whether or not proposals are approved, lowers elapsed time costs and regulatory uncertainty for developers. Time limits thus may induce developers to participate in state VCPs and redevelop brownfields whether or not state funding for site reclamation is available. There is no evidence available indicating that time constraints on decisions affect rates of approval or rejection of proposed site redevelopment plans, despite the concerns that some opponents have expressed about such deadlines.

Variable Cleanup Standards. One major innovation present in most state VCPs is flexibility in cleanup standards, with requirements most often tailored to intended future uses. This flexibility permits redevelopment without complete mitigation. The ability to leave some contaminants on site can lower project costs significantly, bringing multi-family residential, commercial or industrial redevelopment to sites that would have been too expensive to clean for single family residential uses. In most instances, however, the residual pollution, must be contained in some manner and its presence recorded for future reference in site re-use decisions.

Engineering Controls. To qualify for less onerous cleanup standards, developers are often required to install impervious ground “caps,” fences, or other barriers to limit exposure to contaminants left on site. States vary in the extent to which the controls are formally registered and in procedures for oversight and assurance that the controls are maintained over time. (Multi-family housing may be made possible with such barriers when single family units are not appropriate, since landlords or condominium associations are more easily regulated than are a group of individual homeowners.)

Institutional Controls. Three different types of institutional controls may be used to make sure future uses are consistent with the flexible cleanup standards permitted and to assure that engineering controls are maintained over time (68, 95, 100). While any of these three controls would provide a record of site conditions and engineered barriers, the extent to which the information accompanies all deeds in future real estate transactions varies:

- ! Deed Notices, the most common control (used in MA, MI, PA, TX and WI, for example), rarely need to be reported as a matter of law, although a record is inserted in county property files;
- ! Deed Restrictions, employed in CA, MA, MI, and WI, among others, provide a more formal record and are more likely to be reported in property transactions;
- ! Environmental Easements, much discussed but not yet employed, would provide the most complete and permanent record of the need to limit land uses.

Many states permit engineering controls and/or varying cleanup standards for the immediate new land use proposed for a site, but do not have formal institutional controls in place. Even among those states that do have recording requirements in their legislated VCPs, the residual pollution or engineering controls triggers that require institutional controls vary, so the same levels of contamination may be recorded on one site but not on another (59). Despite some claims to the contrary, scant evidence exists that such constraints on future land uses reduce sale prices or future property values (30, 31, 78). Indeed, some sellers impose their own use limits on buyers and subsequent land users in order to protect themselves from future liability claims for any residual contamination(92).

Right-to-Know/Public Participation Requirements. The public’s right-to-know and to participate in decisions about brownfields redevelopment are treated very differently across the states. Some states (PA for one) tie disclosure rules to the extent of cleanup. In such instances, when developers are allowed to meet lower mitigation standards, the cleanup cost savings may be

offset by the expenses associated with increased public participation requirements. On the other hand, such community involvement can further reduce risks associated with future third-party claims or local regulatory actions pursued by disaffected neighbors.

Reopener/Reconsideration Clauses. CERCLA reserves the federal right to “reopen” any approved cleanups if new dangers arise or under other conditions that the EPA finds warrant such action. Some experts have argued that this federal threat undermines all state VCP liability relief provisions (113). EPA, however, notes that most brownfields exhibit contamination at levels that are below the horizon of the agency’s regulatory concern. Whatever the cleanup standards promulgated in a state, the conditions that could trigger the reopening of an approved VCP project vary tremendously. Most states require a failure of engineering or institutional controls before a case is reopened. At the most stringent end of the spectrum, PA reserves the right to order further cleanups if new knowledge about risks from toxics demonstrate that prior decisions did not adequately protect human health or the environment or if new cleanup technologies emerge that make further cleanup “economically possible.” Narrow conditions for reopening appear to offer greater certainty to redevelopers, but there is no evidence that even the broad PA provisions impose a risk that deters regeneration efforts.

EPA Memoranda of Agreement (MOAs). Agreements between state VCP operators and the brownfields offices of the EPA Regions in which they are located may provide additional comfort to redevelopers and reduce uncertainties. While these MOAs do not delegate the EPA enforcement powers to the states, they include EPA promises that they will not second-guess state closure decisions without a compelling reason. As of April, 2000, fourteen states have signed MOAs, and six more states are in negotiations (128, 140).

Appendix A: GUIDES TO BROWNFIELD REDEVELOPMENT PROCESSES

Table A-1 describes many different “how to” guides to brownfields redevelopment. There is rapid and ongoing change in the regulatory, legal, and financial climate for these projects. Consequently, we have tried to indicate where the source material may be dated. Furthermore, we recognize that both the goals of brownfields regeneration and the challenges and opportunities of such developments vary tremendously among localities. Accordingly, it would be inappropriate to identify the “best” guide—or even to rank order the materials as regards their apparent value.

Instead, we have provided a profile of the key features of some of the guides available to assist EDOs. This list should not be considered comprehensive. Many state economic development and environmental agencies write or sponsor manuals that are very specific to their programs, and other groups have generated guides with one or another special interest or redevelopment concern in mind.

The volumes described here, even where we indicate a special focus or concern, provide types of information and illustrative guidance that could be of value to many different EDOs across the country. We have used organizational authorships in the table, rather than actual authors, to provide an indication of the perspective guiding the preparation of each guide.

Table A-1 Guides to Brownfield Redevelopment Processes								
Organizational Author - Title (Citation Number)	Date	A	B	C	D	E	F	Comments
American Bar Association - <i>Brownfields: A Comprehensive Guide to Redeveloping Contaminated Property (40)</i>	1997	T	T	T	L	T		Somewhat academic. Good, but already dated, description of state programs.
Center for Neighborhood Technology - <i>Recycling Contaminated Land: A Community Resource Guide (54)</i>	1996	L	T	L		T	L	Strongly focused on Chicago, but useful for its orientation and focus on community involvement in brownfield project planning..
Consumers Renaissance Development Corporation - <i>Brownfield Redevelopment Guide (36)</i>	1998	T	L	L	L	T	L	Michigan specific. Strong community development orientation. Good on process.
Council of Great Lakes Governors - <i>A Blueprint for Brownfield Redevelopment (37)</i>	1998		L	L		L	T	Applies to Great Lakes States and Provinces only. A lot of political fluff but good descriptions of state programs.
Council for Urban Economic Development - <i>Brownfields Redevelopment Manual (38)</i>	1998	T	T	T	T	T		Limited discussion of actual development projects, but strong on financial and other tools.
Environmental Law Institute - <i>A Guidebook for Brownfield Property Owners (45)</i>	1999	T	L	T	T	T		Private sector orientation, but good discussion on how to involve community groups.
Georgia Tech Research Corporation - <i>Community Brownfield Guidebook (74)</i>	1996	L	T	L	L	T		Strong science. Limited case examples.

Information Provided

- A:** Legislation (liabilities, risks, financing concerns)
B: Physical contamination and remediation processes
C: State and federal programs
D: Private sources of financing and insurance services
E: Community involvement, environmental justice, and/or employment issues
F: Illustrative cases

Key to Column Codes:

- T** Useful for current project planning and development program design
O: Outdated by the passage of time; too much has changed in the policy context
L: Limited scope of coverage; some information, but it may not be of great value

Table A-1, continued								
Guides to Brownfield Redevelopment Processes								
Organizational Author - Title (Citation Number)	Date	A	B	C	D	E	F	Comments
Int'l City/County Management Assoc. & Northeast-Midwest Institute - <i>Brownfields Redevelopment: A Guidebook for Local Governments and Communities</i> (64)	1997	T	T	T	T	T	T	The most comprehensive guide. Encyclopedic but becoming dated as state programs change. Strong community orientation.
Int'l. City/County Management Association <i>Putting the Pieces Together: Local Government Coordination of Brownfield Redevelopment</i> (63)	ND			T		T	T	Post-1996 survey of nearly 40 Pilots provides excellent guidance on inter-organizational and inter-agency coordination at the local level.
LEXIS/Matthew Bender Co. <i>Brownfields Law and Practice: The Cleanup and Redevelopment of Contaminated Land</i> (52)	1998	T		T	T	T	T	Looseleaf, regularly updated and expanded since first release, with chapters on each state and on different liability and financing concerns. Designed for attorneys providing advice, not independent EDO deal-making personnel.
Northeast-Midwest Institute - <i>Coming Clean for Economic Development</i> (17)	1996	T		T		T	T	Becoming dated, especially with regard to federal and state government programs.
Northeast-Midwest Institute - <i>NewLife for Old Buildings</i> (16)	1991	O	L	O			O	Seminal work, with details now outdated; useful for understanding scope of problem.
Urban Land Institute - <i>Turning Brownfields into Greenbacks</i> (113)	1998	T	T	T	T		T	Overly restrictive definitions of brownfields; lacks community development perspective. Strong on financials and good applied cases.

Information Provided

- A:** Legislation (liabilities, risks, financing concerns)
- B:** Physical contamination and remediation processes
- C:** State and federal programs
- D:** Private sources of financing and insurance services
- E:** Community involvement, environmental justice, and/or employment issues
- F:** Illustrative cases

Key to Column Codes:

- T** Useful for current project planning and development program design
- O:** Outdated by the passage of time; too much has change in the policy context
- L:** Limited scope of coverage; some information, but it may not be of great value

Appendix B: USEFUL CASES OF BROWNFIELD REDEVELOPMENT

Brownfields case studies can be found in many different sources. Many of these are primarily intended to publicize the successes of the sponsoring organizations. We have selected an array of cases offering strategies and lessons learned from brownfields experience that may be broadly applicable and useful to EDOs dealing with similar issues. Our focus is on new jobs or profit-generating activity on-site. As a result, we exclude one very rich source—Trust for Public Land (1999), not because the descriptions are not useful, but rather because all twenty cases involve conversion of brownfields to park lands and open space (117).

All of the cases enumerated in Table B-1 include a description of the outcomes and the lessons learned from the project. Cases are presented in alphabetical order by state.

**Table B-1
Illustrative Brownfield Economic Development Cases**

Case Name	Source	State	Project Start	A	B	C	D	E	F	G	H	I	J
Chiron Center	113	CA	1996	T	I	C	T	T	T	T	T	T	
Kaiser Steel Mill	48	CA	1992	T	I	P		T			T		
Lonestar Steel	17	CO	1994	T	I	I	T			T			
GCP Brass Mill	113	CT	1993	T	I	C	T	T	T	T	T	T	
Meriden Rolling Mills	48	CT	1993	T	I	I		T		T		T	
Science Park Winchester Factory	113	CT	1986	T	I	I		T	T	T	T	T	T
Scripto Pen	74	GA	~1992	T	I	P					T		T
Council Bluffs Site	48	IA	1996	T	I	I		T		T		T	
American National Can	75	IL	1994		I	C		T		T	T	T	
Jim's Truck & Trailer	36	IL	1995		C	C		T		T		T	
Madison Equipment	96	IL	1993	T	I	I		T		T		T	
Occidental Chemical	36	IN	1993	T	I	C	T	T					
Papa John's Stadium	119	KY	1991	T	I	P		T		T	T	T	T
Lawrence Gateway	96	MA	1994		I	P		T		T		T	T

Legend (Case Features):

T = "yes"

Start: First date cited in narrative, suggesting when the project started

- A.** Redevelopment Completed (at least a portion of site in productive use)
- B.** Prior Use: I (Industrial), C (Commercial), O (Other)
- C.** New Use: I (Industrial), C (Commercial), R (Residential), P (Public/Recreational), O (Other)
- D.** Used State VCP
- E.** Describes remediation
- F.** Provides complete financial data
- G.** Illustrates public financing tools
- H.** Illustrates private financing
- I.** Describes local government/EDO involvement
- J.** Describes community involvement and/or economic/environmental justice issues

Table B-1, continued
Illustrative Brownfield Economic Development Cases

Case Name	Source	State	Project Start	A	B	C	D	E	F	G	H	I	J
Medical City	64	MA	1992	T	I/C	O	T	T		T	T	T	T
Monsanto/Gateway	48	MA	1993	T	I	C	T	T		T		T	
American Can	48	MD	1997	T	I	I	T	T		T	T	T	T
Auto Ion Area	62	MI	1996		I	C/P		T		T			
BASF South Works	64	MI	1990	T	I	P		T		T	T	T	T
Detroit Community Health Connection	113	MI	1994	T	C	C	T	T	T		T		T
Fisher-Graff/ Alumilite	62	MI	1995	T	I	I				T		T	T
River's Edge	36	MI	1997		I	C/R	T	T		T		T	
Willard/Wallbridge	62	MI	1996		I	I	T			T		T	T
Crosby Lake Bus. Park	96	MN	1993	T	I	I/C	T	T			T	T	T
Northeast Retail Project	96	MN	1993		I	C		T	T	T		T	T
Wilensky Salvage	17	MN	1994	T	I	I/C	T	T		T		T	
Golden Belt Business Educ. Service Center	125	NC	1997	T	I	P					T	T	T

Legend (Case Features):

T = "yes"

Start: First date cited in narrative, suggesting when the project started

- A.** Redevelopment Completed (at least a portion of site in productive use)
- B.** Prior Use: I (Industrial), C (Commercial), O (Other)
- C.** New Use: I (Industrial), C (Commercial), R (Residential), P (Public/Recreational), O (Other)
- D.** Used State VCP
- E.** Describes remediation
- F.** Provides complete financial data
- G.** Illustrates public financing tools
- H.** Illustrates private financing
- I.** Describes local government/EDO involvement
- J.** Describes community involvement and/or economic/environmental justice issues

Table B-1, continued
Illustrative Brownfield Economic Development Cases

Case Name	Source	State	Project Start	A	B	C	D	E	F	G	H	I	J
Circle F	64	NJ	1993	T	I	I/R		T		T	T	T	T
NJ Performing Arts Center	48	NJ	1986	T	I/C	O	T			T	T	T	
Gowanus Canal	76	NY	1994		O	O		T				T	T
Village Farms	36	NY	1995	T	I	O		T				T	
AES Business Campus	17	OH	1994	T	I	I	T	T		T	T		
Avtex Fiber	17	PA	1989	T	I	I		T		T		T	
Industrial Plaza of York	36	PA	1992	T	I	C		T		T		T	T
Nine Mile Run	35	PA	1995		I	R		T				T	T
Holden-Leonard Mill	96	VT	1986		I	I	T	T		T		T	
Huntington Industrial Center	125	WV	1993	T	I	I/C		T		T	T	T	T

Legend (Case Features):

T = “yes”

Start: First date cited in narrative, suggesting when the project started

- A.** Redevelopment Completed (at least a portion of site in productive use)
- B.** Prior Use: I (Industrial), C (Commercial), O (Other)
- C.** New Use: I (Industrial), C (Commercial), R (Residential), P (Public/Recreational), O (Other)
- D.** Used State VCP
- E.** Describes remediation
- F.** Provides complete financial data
- G.** Illustrates public financing tools
- H.** Illustrates private financing
- I.** Describes local government/EDO involvement
- J.** Describes community involvement and/or economic/environmental justice issues

Appendix C: FEDERAL PROGRAMS AND POLICIES SUPPORTING BROWNFIELDS REDEVELOPMENT

The sources of federal funds that might be used to clean or contain pollution or redevelop brownfields extends well beyond the regularly-identified efforts of the fifteen agencies participating in the Federal Interagency Working Group on Brownfields. The range of federal funds available as of 1999 is well documented in the Northeast-Midwest Institute's *Guide to Federal Brownfield Programs* that is available at: <http://www.nemw.org/BF_fedguide.htm>.

One outstanding source that documents the different possible ways of funding environmental improvements, including brownfields reclamation, is available from the Environmental Finance Branch of EPA, *A Guidebook of Financial Tools: Paying for Sustainable Environmental Systems*.

! The April 1999 update of this excellent compendium is available at:
<<http://www.epa.gov/efinpage/guidbk98/index.htm>>.

! A CD-ROM version of this Guidebook is available from regional Environmental Finance Centers, a list of which is available at: <<http://www.epa.gov/efinpage/>>.

An alternative source that provides useful information on all federal programs and reviews the economic development value of the funds and the private sector impacts of new activity is the *Catalogue of Domestic Assistance Program*. The Catalogue lists all the major federal funding sources by types, average award, likelihood of receipt for funds, and eligible applicants, among other useful tools. It contains instructions on how to use it to find sources of funds and technical assistance for a variety of different development projects. It can be found at: <<http://www.cfda.gov/>>.

Table C-1 offers an initial source for key detailed information: the web sites of the federal agency programs discussed in this review. These web pages cover eligibility and application issues, often including the needed application forms in downloadable form. The home pages of the agencies themselves can be reached from these program-specific sites.

**Table C-1
Federal Programs and Policies Supporting Brownfields Redevelopment**

Agency and program title	Program coverage/activity	Web Sources for More Information
EPA Brownfields Assessment Pilot Demonstrations	\$200,000 to start a brownfields reclamation program and pay for site assessments	http://www.epa.gov/swerosps/bf/pilot.htm#pilot
EPA Brownfields Cleanup Revolving Loan Funds	Up to \$500,000 to capitalize a revolving loan fund to pay for brownfield cleanups	http://www.epa.gov/swerosps/bf/rlflst.htm
EPA Job Training and Development Demonstration Pilots	\$200,000 for environmental employment and training for residents near brownfields	http://www.epa.gov/swerosps/bf/pilot.htm#job http://www.epa.gov/swerosps/bf/job.htm
EPA RCRA/Brownfields Prevention Pilots	Contractor support to expedite cleanups to avoid further environmental problems	http://www.epa.gov/swerosps/bf/html-doc/bfrcra4p.htm
EPA Clean Water State Revolving Loan Fund	Funds can be used to address all forms of water contamination from brownfields	http://www.epa.gov/swerosps/bf/html-doc/cwsrf.htm
EDA Planning Program Grants	Funds for up to 50% of planning costs for brownfield projects, especially for new jobs	http://www.doc.gov/eda/html/planning.htm http://www.doc.gov/eda/html/planothr.htm
EDA Local Technical Assistance Program	Grants to distressed areas to get assistance in addressing special development issues	http://www.doc.gov/eda/html/locltech.htm
EDA Public Works and Development Facilities Program	Funds for specific development needs, with brownfields enumerated as eligible activity	http://www.doc.gov/eda/html/pwprog.htm
EDA Economic Adjustment Program	Funds for particularly distressed areas to plan or implement redevelopment programs	http://www.doc.gov/eda/html/econadj.htm

Table C-1, continued
Federal Programs and Policies Supporting Brownfields Redevelopment

Agency and program title	Program coverage/activity	Web Sources for More Information
HUD Community Development Block Grants	Entitlement grants for neighborhoods; HUD has promoted their use for brownfields	http://www.hud.gov:80/progdesc/cdbgent.html
HUD Section 108 Loan Guarantees	Guaranteed loans to attract capital to large development projects; including brownfields	http://www.hud.gov:80/progdesc/cdbg-108.html
HUD Brownfields Economic Development Initiative	Funds to complement those from Sec 108 loans intended to redevelop brownfields	http://www.hud.gov/bedifact.html
Army Corps of Engineers	Expertise and engineering services available to help cleanups, especially along waterways	http://hq.environmental.usace.army.mil/programs/brownfields/brownfields.html
Department of Health and Human Services	Money from the Agency for Toxic Substances and Disease Registry and the National Institute of Environmental Health Services can serve off-site environmental health needs of brownfield communities	http://www.ATSDR.cdc.gov/COM/commhome.htm http://www.NIEHS.nih.gov/
DOT Federal Transit Administration's Livable Communities Initiative	Planning and technical assistance support for local site reclamation, transit planning and smart growth efforts	http://www.bts.gov/ntl/DOCS/livbro.html
DOT Federal Highway Administration.	Improving road access to brownfields is a factor in highway planning fund allotments	http://www.fhwa.dot.gov/environment/bnflmem.htm

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