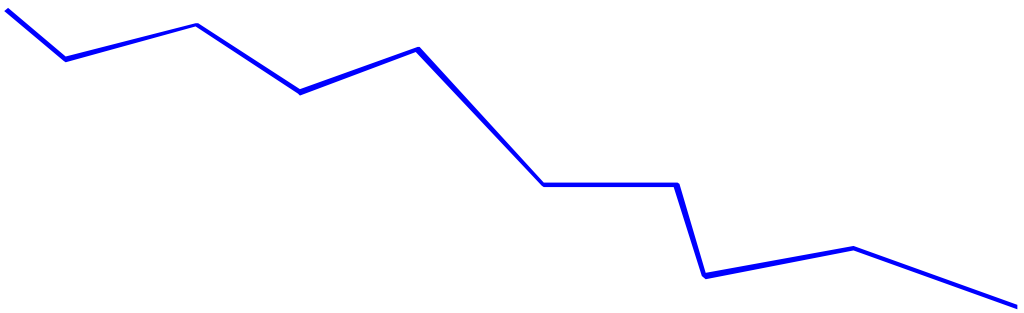

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Reclamation and Economic Regeneration of Brownfields

Peter B. Meyer
H. Wade VanLandingham

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The E.P. Systems Group, Inc.
P.O. Box 2736
Louisville, KY 40201
epsysgrp@aol.com

Award No: 99-07-13803

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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 1

"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

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 25ch sc cal taxeasingly

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 *risk*s 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 S548 Tc 7 of 1mromise higarrie7sTc 7aE391ely,edenyafter compled-19kehol proTM

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

- 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

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 hace concerned 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).

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**

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

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 tv TD f -0.3621 Tc 0.3621 smld

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 pridse Grants or l0fw (tant) T

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

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

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 is 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 - *Brownfields: A Comprehensive Guide to Redeveloping Contaminated Property* **(40)**	1997	**T**	**T**	**T**	L	**T**		Somewhat academic. Good, but already dated, description of state programs.
Center for Neighborhood Technology - *Recycling Contaminated Land: A Community Resource Guide* **(54)**	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 - ***Brownfield Redevelopment Guide*** **(36)**	1998	**T**	L	L	L	**T**	L	Michigan specific. Strong community development orientation. Good on process.
Council of Great Lakes Governors - ***A Blueprint for Brownfield Redevelopment*** **(37)**	1998		L	L		L	**T**	

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			T	T	T	T	T	T	
Meriden Rolling Mills	48	CT	1993	T	I	I		T					

ILon03TjCa636 rit04 Tj 128 Science Park Winch0 025 Tc0t

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													

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/bnfldmem.htm

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