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Brownfields Development: From Individual Sites to Smart Growth

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AGENDA FOR A SUSTAINABLE AMERICA

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Chapter 5

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Joel B. Eisen

In the late 1980s, communities across America faced a number of obstacles to successful urban redevelopment. One obstacle, though hardly the only one,[1] was "the fear and uncertainty associated with potential environmental contamination [that] was seriously undermining efforts to keep urban areas vital."[2] This fear of environmental contamination focused on abandoned or underused urban sites that were not already the target of federal environmental attention and enforcement, such as those highly contaminated sites found on the National Priorities List. These sites differ widely in their prior uses, including former steel mills and other industrial properties, gas stations and other commercial tracts, and even residential properties.

Collectively, these have come to be known as "brownfields." Federal law today defines a brownfield site as "real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant."[3] The term differentiates these sites from "greenfields," which are suburban and exurban locations that developers have been thought to prefer for new construction.

Remediation and reuse of brownfields is a hallmark of sustainable land use because the societal and economic benefits of remediating and rehabilitating an underused urban parcel are often greater than those of comparable development taking place at greenfields locations.[4] These benefits are mentioned frequently in the large (and growing) body of brownfields literature, where brownfields redevelopment is seen as especially desirable because it meshes with the goals of the smart growth movement. However, not all brownfields redevelopment activity is "smart," for development of individual sites continues to be parcel-specific and state brownfields programs do not fully integrate well-known benchmarks of sustainable development. These benchmarks, to which this chapter's recommendations are linked, include:

- Effective public involvement in brownfields remediation and reuse decisions;
- Integrated decisionmaking procedures in state voluntary cleanup programs (VCPs); and
- Measurable outcomes for sustainability embodied in program designs.

The Brownfields Challenge

The extent of the brownfields problem remains significant, as indicated in a 2004 report by the National Association of Local Government Environmental Professionals (NALGEP) and the Northeast-Midwest Institute (NEMW). The report states: "Virtually every community in America is plagued by idle properties that lay abandoned for years due to fear of environmental contamination, unknown cleanup costs, and potential legal liability issues. It is estimated that there could be as many as 1 million of these so-called "brownfield" properties nationwide."[5]

However, the past two decades have seen the birth of what could be called the brownfields industry.[6] Extensive redevelopment activities are taking place at formerly abandoned or underused sites,[7] spurred by two major legal developments: (1) the emergence in virtually every state of voluntary cleanup programs (VCPs) and other brownfields programs and initiatives; and (2) federal protection for brownfields developers through a 2002 amendment to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA, or "Superfund law").[8] The 2002 law provides protection against subsequent liability for cleanup of a brownfield site for a developer that conducts a cleanup in a state VCP, so long as it meets the requirements of the 2006 rule of the U.S. Environmental Protection Agency (EPA) to make "all appropriate inquiries" (AAI) before acquiring ownership of brownfields sites.[9] The AAI rule establishes specific requirements for conducting due diligence into the previous ownership, uses, and environmental conditions of a site for the purposes of qualifying for liability protections available to landowners under CERCLA.

Current brownfields redevelopment initiatives go far beyond attention to liability protection, however, involving full-fledged programs at the state and federal levels. The EPA's Office of Brownfields Cleanup and Redevelopment administers its Brownfields Program to "empower states, communities and other stakeholders in economic

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redevelopment to work together in a timely manner to prevent, assess, safely clean up and sustainably reuse brownfields."[10] To that end, EPA offers grants for activities such as assessment of site contamination and cleanup, as well as loans, training, and education programs.[11] Several other federal agencies also offer funding and other resources for brownfields projects.[12] Section 211 of the 2002 federal brownfields law added the new section 104(k) of CERCLA, establishing a federal grant and loan system for brownfield site characterization and assessment and brownfield remediation.[13] Up to $200 million per year was authorized for brownfields assessment and cleanup under this program.[14] It has been reported, however, that these programs have not been fully funded and that more public funding is necessary for successful brownfields remediation and reuse.[15]

State programs for the remediation and reuse of brownfields have matured rapidly since their inception in the late 1980s, with 49 states now featuring such programs and many (including such pioneering states as Minnesota and Pennsylvania) having over a decade of experience in processing sites through their programs. By 2002 it could be said that "[a] decade of experience with state and federal brownfields programs has yielded broadly perceived successes."[16] In cities across the nation, brownfields have been converted to industrial, commercial, residential, and recreational uses. Examples abound in cities such as Houston,[17] Chicago,[18] and Trenton,[19] to name a few.

Brownfields and Smart Growth

In the past several years, there has been a much greater link between the smart growth movement and brownfields remediation and reuse. Smart growth refers to the myriad "creative strategies to develop in ways that preserve natural lands and critical environmental areas, protect water and air quality, and reuse already-developed land," which stand in opposition to the existing patterns of development that result in suburban and exurban sprawl.[20] EPA's Smart Growth in Brownfield Communities initiative asserts that "[b]rownfield redevelopment is an essential component of smart growth, as both seek to return abandoned and underutilized sites to their fullest potential as community and economic assets."[21] As another report puts it, the two movements—brownfields redevelopment and smart growth—developed from different roots but have similar goals: "Redevelopment of existing buildings and land, including contaminated brownfield sites, has been pursued since the early 1990s, and is a sepa-

rate activity from the smart growth initiatives. However, both share the same goals of providing economic growth, creating jobs, and creating a healthy environment."[22]

Because urban sites are often good candidates for infill development that can preclude the need to build at a greenfields location (and thereby avoid the perpetuation of suburban and exurban sprawl), "[r]euse of urban space . . . is seen almost reflexively as smart growth."[23] But one should be careful to avoid viewing all brownfields revitalization as consistent with smart growth, because most brownfield sites are developed on a parcel-by-parcel basis, under the control of site developers—not as part of a plan for sustainability. Under these conditions, "there is no guarantee that the growth it promises to provide is 'smart.'"[24]

Brownfields and Sustainable Development

Three conditions must be satisfied for brownfields remediation and reuse programs to achieve sustainable development:

(1) *Effective public involvement in brownfields remediation and reuse decisions.* As Agenda 21 of the U.N. Conference on Environment and Development notes, "citizens must be involved in major environmental decisions and receive timely and coherent information to enable them to take part in relevant decisions." To accomplish this in the brownfields revitalization context, an effective public participation system is needed to provide for input by the affected community throughout the process, from project selection to remediation and completion of the project." One report argues, "Involve Citizens From the Start—Community involvement and consensus is one of the most important ingredients for a successful brownfield project."[25] At the federal level, EPA's Sustainable Brownfields Model Framework calls for brownfields revitalization to take place as a "conscious, intended collaboration between private sector organizations, public agencies, and the community as a whole."[26] State VCPs rarely require such collaboration, however, and only those developers savvy enough to form partnerships with affected communities typically seek local input.

(2) *Integrated decisionmaking procedures in state VCPs.* Agenda 21 calls for "the progressive integration of social, economic, and environmental issues" in governmental decisionmaking.[27] In any brownfields remediation and reuse project, there are many important points where consideration of a broad range of factors is necessary.

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First, at the stage where the merits of a proposed revitalization project are being assessed, the project should fit within an overall plan of development for the affected community. One report observes, "Communities will succeed in brownfields revitalization when they consider these properties as community and economic opportunities that happen to have an environmental challenge, and connect brownfields initiatives to their broader community vision and revitalization priorities."[28] Second, once a project has been selected and remediation is taking place, the state should exercise vigorous oversight to ensure that the cleanup is sufficient.

In practice, much of the decisionmaking related to brownfields redevelopment takes place at the state and local levels. The states bear responsibility for administering cleanups in VCPs, and developers rely on state releases from liability after the 2002 federal law limited the EPA's ability to reopen a cleanup conducted in a VCP.[29] Of course, local governments are involved because they exercise their traditional control powers over land use decisions.

Unfortunately, most state and local approaches to brownfields redevelopment continue to fall short of the ideal of integrated decisionmaking. The parcel-by-parcel approach continues to dominate in state VCPs, and states do not typically require brownfields developers to show that their proposed reuse of the property bears any relationship to an overall vision for the community, nor do states evaluate this after remediation work has been done and the new uses of the sites are in place. Project selection continues to be left to developers, and states have largely delegated administration of the cleanup phase to developers themselves (or, in an increasing trend, to independent contractors licensed by the states).

(3) *Measurable outcomes for sustainability*. To date, there has been little "systematic, careful documentation of actual practice at a wide range of [brownfield] sites."[30] Because a large number of projects have been processed through state brownfields programs and VCPs, more should and indeed could be done to assess whether brownfields remediation and reuse has truly been beneficial to the affected community.[31] States should assess the success of their brownfields programs using concrete metrics that reflect the broad scope of their urban redevelopment goals, which requires them to go far beyond observing simply whether a project has created jobs or increased the local tax base.

If brownfields revitalization is indeed to be considered as part of smart growth strategies, it is necessary that program effectiveness be evaluated in an appropriate context. One commentator calls the relative lack of data on whether brownfields reuse is providing the claimed benefits a "lost opportunity . . . to empirically test different approaches to real property remediation."[32] In-depth analysis might suggest in a given state (or for a given type of project) that voluntary cleanup programs have spurred economic redevelopment appropriate for a community. Or it might not, and for this reason, "state regulators may be consequently reluctant to perform this searching analysis."[33]

Thus, while much progress has been made toward sustainable reuse of brownfields, considerable work still needs to be done.

Recommendations

Three conditions for sustainability were listed in the chapter's introduction:

- Effective public involvement in brownfields remediation and reuse decisions;
- Integrated decisionmaking procedures in state voluntary cleanup programs (VCPs); and
- Measurable outcomes for sustainability embodied in program designs.

The following four recommendations are designed to meet those requirements.

1. Increase the use of areawide brownfields initiatives. States should do more to integrate brownfields remediation and reuse with their existing programs for promoting economic development. One promising way in which this is taking place—in states such as New Jersey and New York—is the establishment of areawide brownfields initiatives, in which state regulators attempt to address multiple brownfields in the same community.[34] A prominent feature of these initiatives is early and extensive involvement by citizen steering committees. These programs can provide for more enhanced public participation and a wider focus on community redevelopment than the narrow, parcel-by-parcel approach. This recommendation would enhance public participation as well as integrated decisionmaking by coordinating remediation and economic development.

In New Jersey's Brownfields Development Area (BDA) initiative, for example, the state's Department of Environmental Protection

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(DEP) "works with selected communities affected by multiple brownfields to design and implement remediation and reuse plans for these properties simultaneously."[35] A recent article by a former assistant commissioner of DEP responsible for developing the initiative notes that "the BDA Initiative guarantees local involvement" because by law it gives "the reuse preferences of the steering committee substantial persuasive force."[36] He also notes that the initiative has the potential to address contamination that has migrated across multiple sites, rather than just that which is present at an individual site.[37]

A recent report by the Lincoln Institute of Land Policy observes that "[i]n contrast to site-specific remediation, the areawide approach of the [New Jersey] BDA provides a framework that addresses the larger physical, political and social contexts of an affected community."[38] The broader approach makes it a much more potent vehicle for achieving sustainable development than the parcel-specific approach. Similar initiatives should be considered by more states.

2. Develop measures to assess progress toward sustainability. It is difficult to get a handle on the overall impact that brownfields projects have on communities because doing so requires, "among other things, accounting for the wide variety in state program features, the numbers of cases handled, and the types and numbers of results. It also requires looking longitudinally at a statistically significant sample of sites to see whether environmental problems develop or persist after a period of years."[39] For true sustainable development, however, this sort of long-term analysis is exactly what is required.

In particular, states should develop evaluation methods that address two distinct sets of issues. First is whether the environmental risks to public health and welfare have truly been lessened or eliminated, or whether the original problems would recur in the future, after sites have presumably been remediated in state VCPs. Many states allow sites into their brownfields programs that are more contaminated than one might expect given the model of a brownfield site as one that is lightly contaminated and not currently the target of state or federal environmental enforcement.[40] Thus, it should not be assumed that the problem has simply vanished, but instead state environmental regulators should have safeguards in place for long-term monitoring of brownfield sites that have been processed through their programs.

Second, the states should conduct "a more thorongh analysis of whether brownfields developers . . . are consistently providing prom-

ised economic benefits in return for involvement with and remediation of their sites."[41] Such an analysis requires more than simple repetition of developers' promises that jobs and tax revenues will flow from particular projects. One broad effort to assess whether a goal of "returning formerly contaminated sites to long-term, sustainable, and productive use" is being met was a multi-program, multi-factor analysis by EPA's Region 3 conducted in 2006.[42] Regional EPA staff, working with a number of stakeholders, sought to develop quantifiable data on land uses occurring on cleanup sites to establish baseline information" that would go beyond anecdotal data to assess "[t]ypes of uses and reuses occurring," the "[r]elationship between the cleanup status of sites and reuse," "[l]ocal economic, social, or ecological benefits from reuse on cleanup sites," and "[c]hallenges in collecting this kind of information prior to developing and promoting broader national measures for land revitalization goals."[43] Analytical rigor on this model should become more widespread in brownfields programs.

3. Promote "green building" practices in site reuse. Development at an infill site often involves a complete overhaul of existing infrastructure, so it is an ideal time to employ the increasing array of building design and construction techniques that enhance environmental performance of new buildings. EPA notes on its sustainability website that "[g]reen or sustainable building is the practice of creating healthier and more resource-efficient models of construction, renovation, operation, maintenance, and demolition."[44] "Green" buildings incorporate energy and environmentally desirable techniques, from energy conservation to the use of healthy building materials and waste reduction strategies. This recommendation, of course, directly addresses a project's environmental performance.

The NALGEP/NEMW report states that sustainable brownfield reuse involves "[p]romot[ing] environmentally responsible reuse via green building, low impact development practices, smart growth strategies, preservation of parks and open space, transit-oriented development, and pollution prevention."[45] One outstanding example of how this can work in practice is the Chicago Center for Green Technology, a brownfield redevelopment in Chicago whose building qualified for the U.S. Green Building Council's Leadership in Energy and Environmental Development (LEED) platinum rating, the culmination of a rigorous evaluation of green building and design techniques used in the Center's construction.[46] EPA has several initiatives that link green buildings and brownfields revitalization. Its Green Build-

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ings on Brownfields Initiative has sponsored a number of pilot projects, and its ER3 Initiative helps developers identify techniques such as those used at the Chicago site.[47] As EPA notes, "[b]y incorporating sustainable practices and principles into their projects, developers of contaminated sites can minimize the impact of the project on the environment without sacrificing profitability."[48] More brownfields developers should take advantage of these opportunities.

4. Develop "second generation" policies to improve performance of state VCPs.

The NALGEP/NEMW report states:

> Despite the tremendous progress of state voluntary cleanup programs, there are opportunities to improve state brownfields programs by: (1) providing sufficient staff to ensure timely approvals for voluntary cleanups; (2) increasing funding for site assessment, cleanup, and predevelopment costs; (3) better leveraging funding from state underground storage tank programs with other sources of brownfields funding, to promote the cleanup and reuse of sites contaminated with petroleum; and (4) obtaining greater involvement in brownfields projects from state economic development, transportation, infrastructure, land use and housing agencies.[49]

A recent article on the performance of New Jersey's large and active VCP reported a number of shortcomings, including a slow pace of cleanups and suboptimal oversight of contaminated sites.[50] In part, as the report above notes, this stems from funding and staffing levels that are inadequate to process sites efficiently through the program.[51] A worrisome development in New Jersey is the resistance by state regulators to assuming even minor increases in their oversight responsibilities, as shown in their recent VCP regulations.[52] If states such as New Jersey are to exercise vigorous oversight over brownfields developers, they must take a more active role in ensuring that cleanups are done properly and in a timely way. This recommendation directly addresses all three conditions for sustainability.

The states are missing another opportunity to improve their brownfields programs because at present these programs tend to operate independently of their counterpart agencies in state governments.[53] This does not allow for the sort of searching analysis of long-term project benefits that should be a central feature of brownfields policies. A specific instance in which state economic development and environmental regulators could cooperate would be an ongoing

determination of whether the sites that have been processed through brownfields programs and VCPs match those that fit state and local development criteria.[54]

Conclusion

Simply stating that brownfields remediation constitutes sustainable development or is consistent with smart growth principles may not make sense in the context of a given project or as part of an urban development strategy for an entire community. Unfortunately, state regulators continue to follow a developer-centered approach that puts control of site decisions in the hands of developers and is loath to undo the advantages conferred on developers for coming voluntarily to the states. This is a major trend that should be reversed, with a second generation of brownfields policies adopting the recommendations set forth above,[55] if the programs are to attain the goals of sustainable development.

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ENDNOTES

1. KRIS WERNSTEDT ET AL., RESOURCES FOR THE FUTURE, THE BROWNFIELDS PHENOMENON: MUCH ADO ABOUT SOMETHING OR THE TIMING OF THE SHREWD? 4 (Nov. 2004) [hereinafter BROWNFIELDS PHENOMENON] (mentioning such factors as "the expectations and behavior of public and private parties involved in the development, environmental, and financial risks; the importance of subsidies; and the investment climate of host communities" as important in brownfields revitalization decisions), *available at* www.rff.org/Documents/RFF-DP-04-46.pdf.
2. NAT'L ASS'N OF LOCAL GOV'T PROFESSIONALS & NORTHEAST-MIDWEST INST., UNLOCKING BROWNFIELDS: KEYS TO COMMUNITY REVITALIZATION 3 (2004) [hereinafter UNLOCKING BROWNFIELDS].
3. 42 U.S.C. §9601(39)(A) (2002).
4. *See generally* UNLOCKING BROWNFIELDS, *supra* note 2, at 2.
5. UNLOCKING BROWNFIELDS, *supra* note 2, at 3; *see generally* U.S. CONFERENCE OF MAYORS, RECYCLING AMERICA'S LAND: A NATIONAL REPORT ON BROWNFIELDS REDEVELOPMENT (2006), *available at* http://usmayors.org/74thAnnualMeeting/brownfieldsreport_060506.pdf (last visited Apr. 26, 2007) (discussing brownfields challenges).
6. Joel B. Eisen, *Brownfields at 20: A Critical Reevaluation*, 34 FORDHAM URB. L.J. 101, 101 (2007) [hereinafter Eisen, *Brownfields at 20*].
7. *See generally id.*
8. *See* Small Business Liability Relief and Brownfields Revitalization Act of 2002, 42 U.S.C. §§9604-9605, 9607, 9622, 9628 (2002). EPA provides a snapshot of each state's VCP and brownfields programs in U.S. EPA, STATE BROWNFIELDS AND VOLUNTARY RESPONSE PROGRAMS: AN UPDATE FROM THE STATES, *available at* epa.gov/brownfields/pubs/st_res_prog_report.htm (last visited Apr. 26, 2007).
9. *See* Standards and Practices for All Appropriate Inquiries, 40 C.F.R. §312 (2005). EPA's All Appropriate Inquiries page is located at www.epa.gov/brownfields/regneg.htm.
10. U.S. EPA, BROWNFIELDS FEDERAL PROGRAMS GUIDE 27 (2005).
11. *See generally* U.S. EPA, Office of Brownfields Cleanup and Redevelopment website, www.epa.gov/brownfields/ (last visited Apr. 19, 2007).
12. *See generally id.*
13. 42 U.S.C. §9604(k).
14. *Id.*
15. UNLOCKING BROWNFIELDS, *supra* note 2, at 7.
16. Joel B. Eisen, *Brownfields Development, in* STUMBLING TOWARD SUSTAINABILITY 465 (John C. Dernbach, ed. 2002) [hereinafter Eisen, *STS 2002 Brownfields Chapter*]
17. UNLOCKING BROWNFIELDS, *supra* note 2, at 2.
18. *See* consultants' 2005 report prepared for the City of Chicago Department of Environment discussing the Chicago Center for Green Technology built on a former brownfield site, *available at* http://www.epa.gov/

smartgrowth/pdf/Chicago%20SG%20Brownfields%20Project%20Final.pdf (last visited Apr. 26, 2007).

19. Eisen, *Brownfields at 20, supra* note 6, at 111.
20. *See generally* U.S. EPA's Smart Growth website, www.epa.gov/smartgrowth/about_sg.htm (last visited June 1, 2007); Smart Growth Online, www.smartgrowth.org/ (last visited June 1, 2007).
21. *See* U.S. EPA's Smart Growth website, Smart Growth in Brownfield Communities Web page, *available at* http://www.epa.gov/piedpage/brownfields.htm (last visited Mar. 31, 2007).
22. *See, e.g.*, CHICAGO DEP'T OF ENV'T, *supra* note 18, at 2.
23. Eisen, *Brownfields at 20, supra* note 6, at 129. For an international perspective, see J.W. Dorsey, *Brownfields and Greenfields: The Intersection of Sustainable Development and Environmental Stewardship*, 5 ENVTL. PRACTICE 69-76 (2003), abstract *available at* http://journals.cambridge.org/action/displayAbstract?fromPage=online&aid=332495# (last visited Apr. 26, 2007).
24. *Id.*
25. UNLOCKING BROWNFIELDS, *supra* note 2, at 6.
26. Eisen, *STS 2002 Brownfields Chapter, supra* note 16, at 464 (quoting U.S. EPA, SUSTAINABLE BROWNFIELDS MODEL FRAMEWORK 3 (1999)).
27. Eisen, *STS 2002 Brownfields Chapter, supra* note 16, at 462.
28. UNLOCKING BROWNFIELDS, *supra* note 2, at 6.
29. Small Business Liability Relief and Brownfields Revitalization Act of 2002, 42 U.S.C. §9601(41) (2002).
30. BROWNFIELDS PHENOMENON, *supra* note 1, at 1.
31. Eisen, *Brownfields at 20, supra* note 6, at 102.
32. *Id.* at 102 n.7 (quoting David A. Dana, *State Brownfields Programs as Laboratories of Democracy?*, 14 N.Y.U. ENVTL. L.J. 86, 86 (2005)); *see also* BROWNFIELDS PHENOMENON, *supra* note 1, at 4 (noting that "[t]he empirical literature on brownfields—a topic that cuts across many disciplines and scales and is open to a wide range of methodological approaches—remains undeveloped relative to its potential").
33. Eisen, *Brownfields at 20, supra* note 6, at 131.
34. For descriptions of New York's program, see NY-Brownfields.com, www.ny-brownfields.com/index.htm (last visited Apr. 26, 2007); SUSTAINABLE LONG ISLAND, BROWNFIELDS TO GREENFIELD$: A MANUAL ON BROWNFIELDS REDEVELOPMENT, *available at* www.sustainableli.org/documents/BrownfieldstoGreenfields-Final.pdf (last visited Apr. 26, 2007).
35. N.J. Dep't of Envtl. Prot., Brief Synopsis of NJDEP's Brownfields Development Area Initiative, *available at* http://www.state.nj.us/dep/srp/brownfields/bda/bda_synopsis.htm (last visited Mar. 31, 2007).
36. Eisen, *Brownfields at 20, supra* note 6, at 132-33 (quoting D. Evan van Hook et al., *The Challenge of Brownfield Clusters: Implementing a Multi-Site Approach for Brownfield Remediation and Reuse*, 12 N.Y.U. ENVTL. L.J. 111 (2003)).

37. Eisen, *Brownfields at 20*, *supra* note 6, at 133.
38. KRIS WERNSTEDT & JENNIFER HANSON, LINCOLN INST. OF LAND POL'Y, AREAWIDE BROWNFIELD REGENERATION THROUGH BUSINESS-BASED LAND TRUSTS AND PROGRESSIVE FINANCE 7 (2006), *available at* www.lincolninst.edu/pubs/dl/1096_Wernstedt_complete_web.pdf (last visited Apr. 26, 2007).
39. Eisen, *Brownfields at 20*, *supra* note 5, at 102.
40. *Id.* at 115.
41. *Id.* at 131.
42. U.S. EPA, REGION 3, HAZARDOUS WASTE CLEANUP SITES LAND USE & REUSE ASSESSMENT (2006) [hereinafter ER3 INITIATIVE], *available at* www.epa.gov/region03/revitalization/R3_land_use_final/full_report.pdf (last visited Apr. 26, 2007).
43. *Id.*
44. *See* U.S. EPA, Green Buildings Web page, http://www.epa.gov/opptintr/greenbuilding (last visited Apr. 26, 2007).
45. UNLOCKING BROWNFIELDS, *supra* note 2, at 10. *See generally* U.S. EPA, SUSTAINABLE REUSE OF BROWNFIELDS: RESOURCES FOR COMMUNITIES, *available at* http://www.epa.gov/brownfields/policy/BF_Sustain_Trifold.pdf (last visited Apr. 26, 2007) (discussing "green" building practices).
46. UNLOCKING BROWNFIELDS, *supra* note 2, at 110.
47. U.S. EPA, Environmentally Responsible Redevelopment and Reuse (ER3), http://www.epa.gov/compliance/cleanup/redevelop/er3/ (last visited Apr. 26, 2007); U.S. EPA, Green Buildings on Brownfields Initiative, *available at* http://www.epa.gov/swerosps/bf/policy/initiatives_eo.htm#gb (last visited Apr. 26, 2007).
48. ER3 INITIATIVE, *supra* note 42.
49. UNLOCKING BROWNFIELDS, *supra* note 2, at 9-10.
50. *See generally* Eisen, *Brownfields at 20*, *supra* note 6.
51. *Id.*
52. *Id.*
53. UNLOCKING BROWNFIELDS, *supra* note 2, at 8-9.
54. *See, e.g.*, N.J. Dep't of Comm. Aff, Office of Smart Growth, Maps and GIS Data, www.state.nj.us/dca/osg/resources/maps.shtml (last visited Mar. 31, 2007) (collection of GIS data showing how sites fit within state smart growth plans).
55. Eisen, *Brownfields at 20*, *supra* note 6, at 134.