GIS and Brownfields

Encouraging Redevelopment, Public Involvement, and Smart Growth

An Executive Briefing for Local Government Officials

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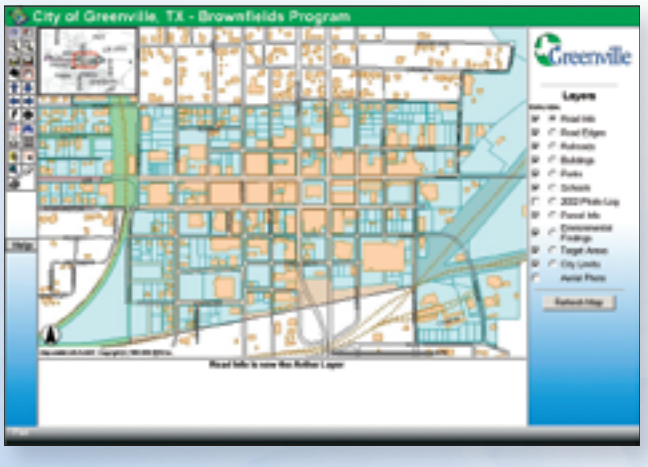
Tools for Better Partnerships: GIS and Brownfields Redevelopment

This International City/County Management Association (ICMA) Flash Executive Briefing for Local Government Officials provides an introduction to geographic information system (GIS) products and their importance in the brownfields redevelopment systems. GIS serves to facilitate brownfields redevelopment in three important ways.

- Continuity across the project and integration with other efforts—GIS for brownfields redevelopment can integrate historic, social, economic, and environmental data and can be managed across the life span of a project as it moves from assessment to cleanup to redevelopment and, finally, into full use where brownfields information will be integrated with other land use records, property management, and data.
- Project management tool—GIS can be used to join, display, and use a range of spatial and attribute data, both historic and current, to manage a multiphased, multistakeholder redevelopment project.



- Stakeholder relationships—Successful brownfields redevelopment depends on multistakeholder engagement to redevelop a site that meets the needs of community members and is economically feasible and environmentally responsible. A GIS system can be easily learned and used by all stakeholder groups to collect and compare a wide range of data and redevelopment options, reducing feelings of bias or unfair representation.

What Are Brownfields?

A brownfields site is a piece of property that is environmentally contaminated—or is perceived to have been contaminated—and poses a health risk, is a liability toward cleanup, or otherwise contributes to neighborhood blight. As it sometimes turns out, parcels of property that are considered brownfields (because they look blighted or were near potentially hazardous activities) have little or no environmental contamination, but they are victims of negative perception and poor location.

What Is Brownfields Redevelopment?

Brownfields redevelopment is a multiphased, multistakeholder project wherein a piece of property is assessed; its future land use is considered among a wide array of interests (e.g., community members, local governments, private sector, environmental regulators); its future use possibilities are weighed against other local land use efforts and zoning; and it is then remediated, redeveloped, and put back into productive use.

Brownfields and GIS

Communities use GIS as a management, decision support, institutional control, and outreach tool to turn brownfields into performing economic assets and to revitalize the economic and environmental health of our communities by

- Tracking and inventorying brownfields
- Promoting revitalized sites to potential businesses
- Mapping
- Site review
- Environmental review

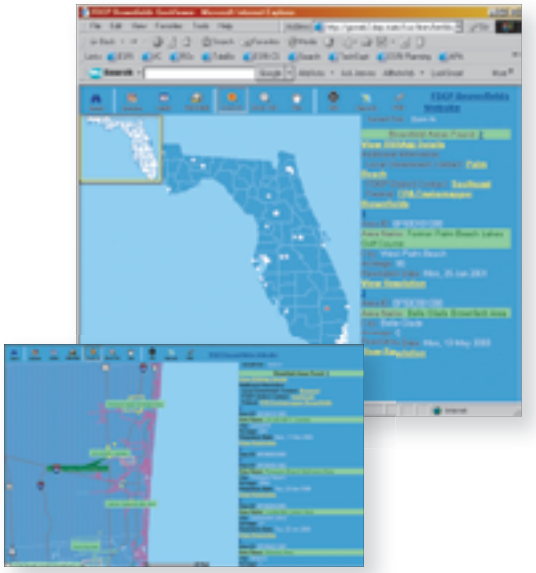
Leading by Example

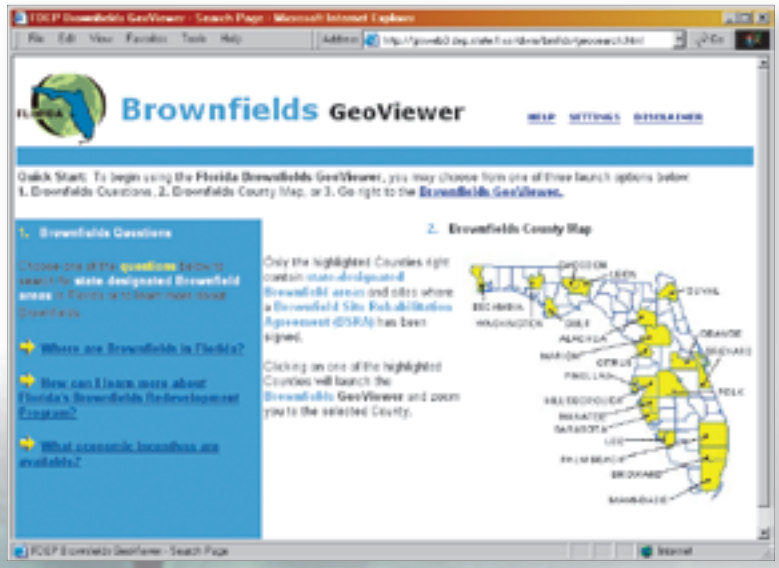
Local Government and Economic Development Agencies Using GIS to Coordinate Brownfields Redevelopment

One key to successful brownfields redevelopment is having well-coordinated resources among all stakeholders. An important first step is for local government staff to coordinate their efforts and programs to maximize both their internal operations and external service delivery. A cooperative team attitude among local government staff is the most important requisite for accomplishing this first step, and an important tool to manage and facilitate internal collaboration and external services is GIS. GIS can be used to assemble a wide range of information among various departments and present it in an understandable way that is useful for both interdepartmental work and external stakeholders such as citizens, developers, and other governmental entities (regional, state, or federal). For example, a county public health agency can take epidemiological data and coordinate it with public works information about transportation, water sources, and other issues that may come into play. There are three important steps for local government staff to take to coordinate their internal efforts on a GIS. Staff should

- Agree to share information and data and reduce redundancy in collection.
- Develop compatible and interactive systems so data can be easily transferred and managed.
- Institute data collection and maintenance standards.

Local government staff must also work together to create systems that maximize their own service delivery and citizen access to information and services. This includes creating user-friendly and mobile systems that citizens can intuitively use.





GIS and Brownfields in Florida—Making It Happen

The Florida Department of Environmental Protection (FDEP), through the use of GIS, has designed two user-friendly tools to assist the public and local governments in the management of brownfields sites. Whether one is in search of the various economic incentives available for a specific property under Florida's Brownfields Redevelopment program or chooses to track and locate sites closed with an institutional and engineering control, these two tools provide valuable information to the novice or expert in a visual format. The first tool is the Brownfields GeoViewer that locates and displays state-designated Brownfield areas and sites and contact information that can result in beneficial reuse of a site. The second tool is the Institutional Controls Registry that tracks all properties upon which an institutional control has been imposed. FDEP works closely with the Governor's Office of Tourism, Trade, and Economic Development; Enterprise Florida, Inc.; municipalities and county entities; and the U.S. EPA to provide incentives for redevelopment and cleanup of brownfield sites.

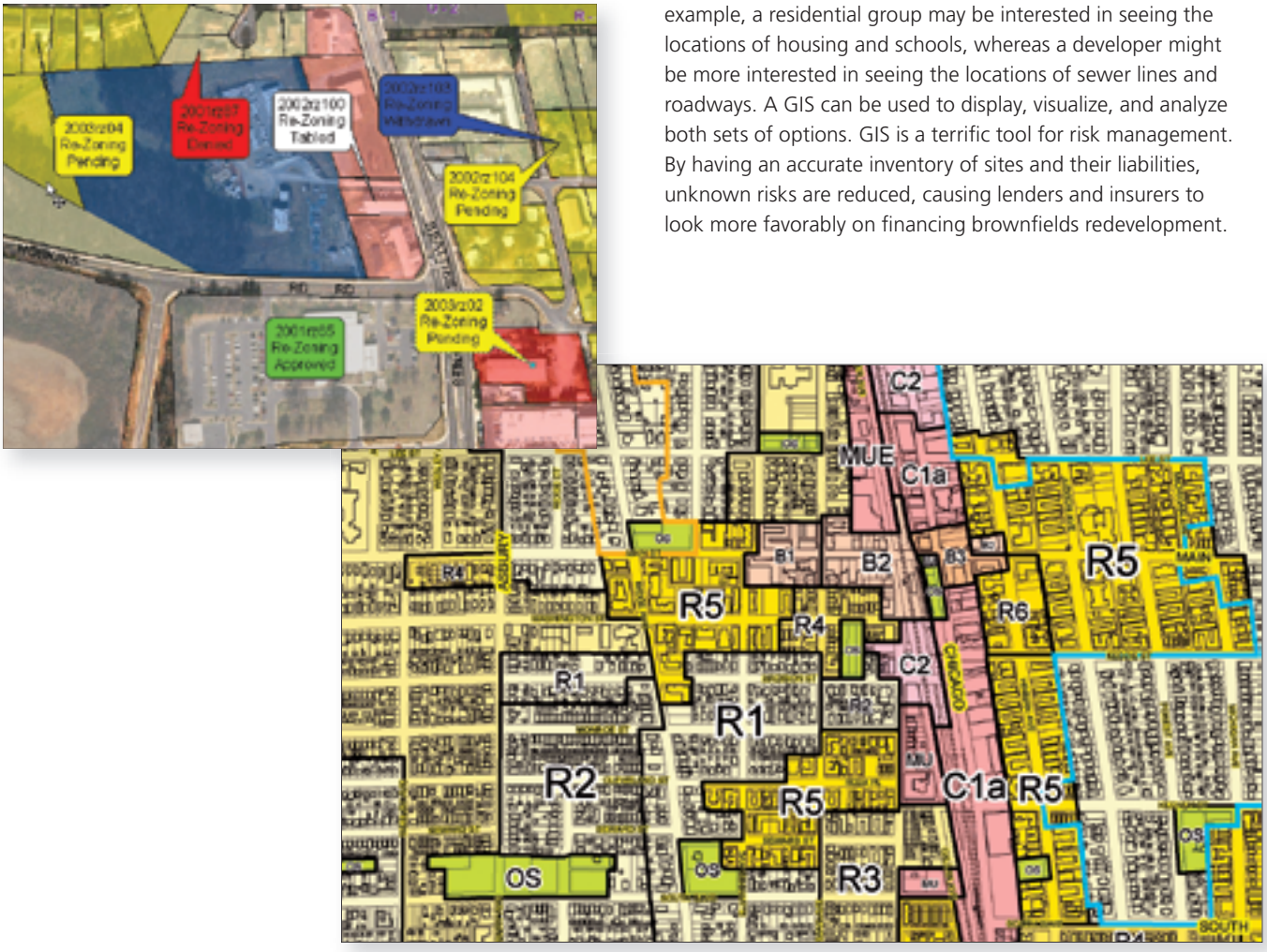
GIS as a Project Management Tool in Brownfields Redevelopment

The process of redeveloping neighborhood brownfields properties is a complex exercise consisting of many phases, involving many stakeholders from the community, and calling upon many different sources of information to arrive at a solution that is advantageous to the community at large. The complexity of redeveloping brownfields is even more apparent, since such projects inherently carry social, economic, environmental, and governing implications that first must be considered in any number of scenarios. Properties eligible for redevelopment are often varied and diverse, resulting from numerous types of previous businesses, land uses, environmental threats, and human activities. The ability to address each of these factors necessitates a tool capable of managing people, resources, and issues across distance and over a period of many years to ensure a successful redevelopment.

GIS is the one tool that has the capability to link all parties and issues through each phase of development. The ability of GIS to bring together many different data sources into a comprehensive and manageable format makes it an excellent tool for site selection. By referencing existing city maps and data layers, identifying specific areas of zoning, and combining that information with other known features, GIS can be used to effectively compare and qualify brownfield sites for particular types of redevelopment.

Proactive marketing to developers of specific sites for a particular purpose is greatly facilitated with the query and analysis capabilities of GIS. Information about a property's unique features when overlaid with other relevant facts, such as zoning, nearby schools, access ways, rail lines, nearby businesses, and population demographics, greatly simplifies the process of rehabilitating problematic real estate into a valuable asset for the entire community.

Land use planning, economic development, and community engagement depend on GIS to visually depict large amounts of information to the numerous stakeholders engaged in redevelopment projects. The capability to examine various scenarios through "what-if" analysis means that different aspects of the environment can be overlaid to examine potential land uses. For example, a residential group may be interested in seeing the locations of housing and schools, whereas a developer might be more interested in seeing the locations of sewer lines and roadways. A GIS can be used to display, visualize, and analyze both sets of options. GIS is a terrific tool for risk management. By having an accurate inventory of sites and their liabilities, unknown risks are reduced, causing lenders and insurers to look more favorably on financing brownfields redevelopment.



Multistakeholder Engagement

GIS is a tool that can facilitate multistakeholder engagement in brownfields redevelopment on a number of levels. First of all, GIS visually represents a range of technical, environmental, social, and infrastructure data in such a way that participants in the brownfields process can understand how components of redevelopment interrelate.

Coordination of government efforts is facilitated through GIS because local, state, and federal economic development agencies can share information and resources. Moreover, community groups and citizens can contribute information such as historic land uses, old photographs, or other data that completes the history of a site. GIS can also be used to engage local community members in land use planning by presenting a number of scenarios and encouraging community feedback. In this way, a GIS can be used in public presentations or public places, such as libraries, to engage citizens who are unable to attend meetings.

The same GIS can be used to capture private sector interests through marketing the site, as well as during the development phase, by mapping improvements and changes such as infrastructure and remediation. And environmental groups and nonprofit organizations committed to specific outcomes, such as environmental cleanup or public parks, can monitor progress and contribute to the process by having their interests included. For example, a parks group might have designs of various parks on the GIS that are available for public review.

All stakeholders can also benefit by accessing and collaborating on all pertinent brownfields information via GIS-based Web sites.

GIS is an important tool that can create a central set of data and information that allows all stakeholders to read from the same page and see the same results. The greatest dividend of such an investment is the opportunity to avoid misunderstandings and different interpretations of redevelopment.

Improving the brownfields redevelopment process does not require reinventing the wheel. Instead, it necessitates taking existing tools and adapting them for new uses. Many local governments use GIS for managing various land use and planning issues such as infrastructure, public health, and economic development. Because all these issues—in some form or another—pertain to the development process, the GIS systems that local governments commonly use to manage them could be used to support brownfields redevelopment. Local governments could also employ GIS applications designed specifically to address brownfields redevelopment.

Source: Stasiak, Elizabeth. "Putting Brownfields on the Map: Using GIS to Coordinate and Facilitate the Brownfields Redevelopment Process." International City/County Management Association, 2002.

Mapping Partnerships in Minnesota

The Minneapolis Neighborhood Information Systems (MNIS) is a data and GIS collaborative that models participation by community organizations, city government agencies, and a university as a data intermediary. This early warning system caught the attention of neighborhood associations, the city of Minneapolis, and the Neighborhood Revitalization Program. Neighborhood associations saw the value of identifying at-risk properties (brownfields) and ways that GIS could be expanded and used more broadly. As the initial group of six neighborhood associations believed in the potential of GIS to advance their work, they each invested approximately $6,000 to develop a GIS. MNIS has made substantial progress. The core group of neighborhood associations actively uses GIS in their work. The collaborative has also hired a staff person to maintain the GIS applications, and it has gained access to administrative data and engaged the city as a partner in this effort.

Supported by the MNIS program staff, groups have been innovative and ambitious in their use of GIS. Examples include the creation of asset maps to attract new residents and investment maps to analyze how residential properties are impacted by proximity to residential and commercial land as well as lead paint risk assessments.

University as a Partner

Support from the University of Minnesota is both strong and consistent with the values of neighborhood organizations. The Neighborhood Planning for Community Revitalization (NPCR) sees its goal as supporting and elaborating on the work already under way in neighborhoods. NPCR has demonstrated a commitment over time to let the community lead the efforts while supporting it with fund-raising, technical assistance, and research. MNIS was able to hire a full-time program coordinator who is based in the community, plays a crucial role in building upon neighborhood associations' enthusiasm, and provides technical support to help groups organize their own data. As such, neighborhoods that work with NPCR identify their own research projects. While working with researchers, these groups became interested in data and mapping technologies and adopted the use of GIS to meet the needs of their projects.

City Cooperation

Community enthusiasm for data and receipt of a Technology Opportunities Program (TOP) grant from the U.S. Department of Commerce supported the city in making a commitment to creating a neighborhood-friendly data platform. At the outset of this project, the city of Minneapolis's administrative data was extremely difficult to access. It was in multiple formats, departments were not sharing information with each other, and there was little incentive to share data with the public.

MNIS has helped make data cleaning and sharing a public issue, and the city of Minneapolis has invested significant resources in converting data.

Learn more about the Minneapolis Neighborhood Information Systems at www.npcr.org/MNIS and the Technology Opportunities Program at www.ntia.doc.gov/top.

Source: "GIS: Mapping for Change Using Geographic Information Systems for Community Development." The Local Initiatives Support Corporation, December 2002.

Minneapolis Neighborhood Information Systems Goals

- Increase the technical capacity of neighborhood organizations through training and support in the use of data, map creation, and GIS project development.
- Provide data in a user-friendly format that allows for maximum use and functionality by neighborhood organizations.
- Provide a tool that can be used to better inform housing strategies, plans, and evaluations.
- Improve relationships between neighborhoods and city staff through neighborhood involvement in project development and data quality measures.
- Bring together neighborhood organizations to share ideas and experiences in regard to data, mapping, and GIS.
- Make MNIS an integral part of neighborhood organizations' day-to-day work practices.

Online GIS Resources for Brownfields Redevelopment

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U.S. Department of Health and Human Services

GIS projects at the U.S. Department of Health and Human Services Agency for Toxic Substances and Disease Registry (ATSDR) are linking demographic, environmental, and health outcome data for communities near brownfields. ATSDR is conducting a research project in three states to enhance state and local public health involvement. ATSDR is using its GIS to identify economically distressed census tracks eligible for the federal Brownfields Tax Incentive, and it is integrating information on economic development, environmental regulation, and populations potentially affected by redevelopment. In addition, GIS is being used to evaluate two ATSDR county health department projects. Two health departments were funded to pilot a capacity enhancing tool for use by local public health departments, economic development authorities, and property redevelopers to examine and properly address public health issues. The model is intended to benefit comprehensive planning of community development, social services, and public health services. ATSDR is on the Web at www.atsdr.cdc.gov/gis.

U.S. Department of Housing and Urban Development

HUD E-Maps is an Internet GIS service that combines information on the Housing and Urban Development (HUD) community development and housing programs with environmental data. HUD E-Maps provides location, type, and performance of HUD-funded activities in every neighborhood across the country and selects information on brownfields, hazardous wastes, air pollution, and wastewater discharges. According to HUD, stakeholders can use the GIS capabilities of E-Maps to combine community development and environmental information with easy-to-understand maps. For example, residents can see firsthand and through graphic representation how proposed development will affect their communities, community development and environmental agencies can identify hazardous waste facilities or polluting industries when planning economic development and housing projects, and developers will be able to leverage federal resources to spur revitalization. HUD E-Maps is on the Web at www.hud.gov/emaps.

The Environmental Protection Agency

EPA's EnviroMapper is a Web-based GIS program that maps data such as air releases, drinking water, toxic releases, hazardous wastes, water discharge permits, and Superfund sites. These data points are organized under application areas, which include watersheds, Superfund, environmental justice, and brownfields. Each application has its own map features and data layers that can be used in any number of ways. For example, EnviroMapper users can select a geographic location and view the facilities in the area that affect the environment (e.g., due to emissions); create maps at the national, state, and county levels; and link maps to text reports about environment conditions.

Pennsylvania Site Finder

The state of Pennsylvania has developed an interactive, GIS-based Web site, www.pasitefinder.state.pa.us, where a potential investor can find a site that meets specific criteria, such as location, parcel size, price, or acreage, to buy or lease. Likewise, a property owner can list a property site on the Web site, which is accessible to all potential investors and enables viewers to learn about the specific criteria of a property (e.g., acreage, square footage of building, contamination). The site also lists a number of financial incentives provided through state, federal, and nonprofit resources.

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ICMA is the professional and educational association of more than 8,000 appointed executive administrators serving local governments in the United States and throughout the world. Members manage cities, counties, towns, townships, boroughs, regional councils, and other local governments with populations ranging from a few thousand to several million people. Founded in 1914, ICMA pursues the mission of enhancing the quality of local government through professional management. Its members turn to ICMA for information, research, and technical assistance on many issues of special interest. ICMA's management assistance includes a wide range of publications, training programs, research, information, and training services.

TMI TECHNOLOGY MANAGEMENT INSTITUTE

ICMA's Technology Management Institute (TMI) facilitates information sharing and exchange among local government leaders about technology issues. ICMA accomplishes this through executive forums, courses, articles, publications, and Webcasts. For more information about TMI, visit tmi@icma.org.

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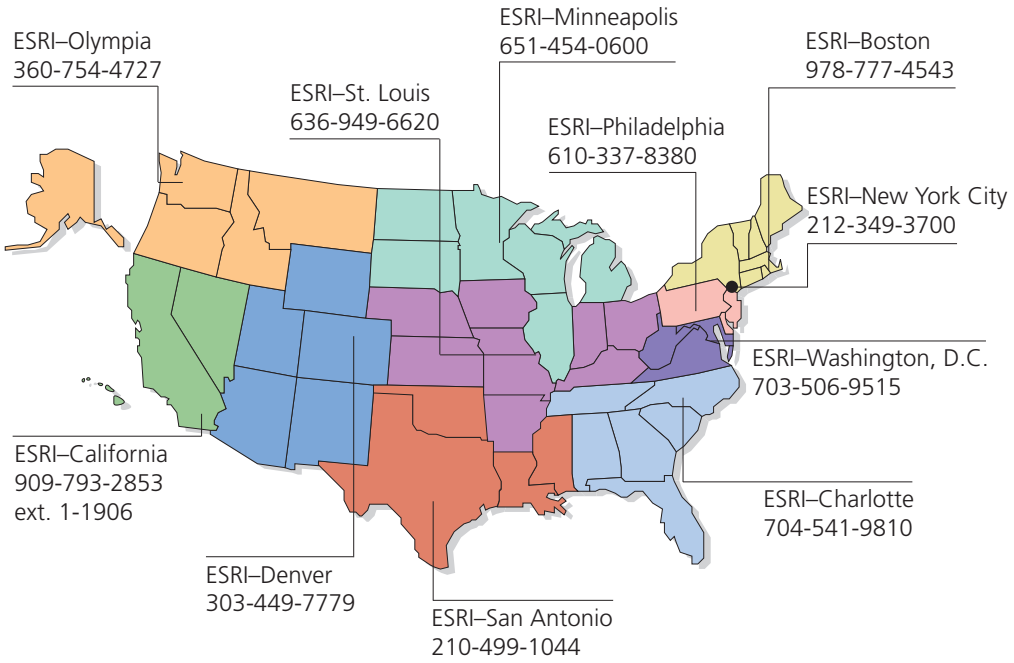

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