A Framework for Incorporating Community Benefits Agreements into Brownfield Redevelopment Projects: The Case of Chelsea, Massachusetts

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I. Introduction to the Project

Community Benefit Agreements (CBAs) are one community development tool that hold great potential for transforming the brownfields redevelopment arena and promoting equitable community revitalization. CBAs are legally-binding contracts, negotiated between developers and community coalitions, wherein developers commit to providing a discrete set of public goods—determined by the coalition-- in exchange for public support (financial and political) of the development project.

Benefits achieved through CBAs may take a variety of forms, and the specific amount and types of benefits negotiated depends largely on the scale of the development project in question. Popular benefits have included community funds, first source hiring programs, the provision of living wage jobs, affordable housing, public facilities and amenities, transportation infrastructure improvements, and environmental remediation. In addition to the measurable benefits, CBAs promote equitable community development vis-à-vis the negotiation/participation process. No longer are residents forced to sit back and merely react to contracts negotiated between cities and developers. Instead, the residents themselves play a proactive role in setting the parameters of the development agreement and shaping the futures of their neighborhoods (DePass 2007; Gross et al 2005).

II. The Case of Chelsea, Massachusetts

The manufacturing and industrial history of Chelsea, Massachusetts, is nearly as old as the city itself. For over two hundred years, residents have endured disproportionate environmental burden and degradation as a result of this legacy. In 2005, Environmental Sociologists Daniel Faber and Eric Krieg published a report concluding that Chelsea was the third most environmentally burdened community in the Commonwealth, with approximately 177 hazardous waste sites per square mile. Over the past decade, residents have begun organizing against the environmental injustices that plague their community. This growing movement demands that redevelopment projects respect current and future generations of residents by improving the environmental, economic, and social quality of the community.

III. Establishing a Spatial Framework for Integrating CBAs into Brownfield Redevelopment Projects

This project uses environmental, land, and community data to establish a framework for incorporating CBAs into redevelopment projects in Chelsea, Massachusetts. The original analysis was completed during the fall of 2007; thus the parcel, environmental, and community data is current as of that time (December 2007). Although the analysis is unique to the city itself, the spatial framework developed and utilized is replicable, and can be adapted to other cities interested in pursuing community-based brownfield redevelopment as an urban revitalization strategy. Fundamentally, this analysis is guided by three primary research questions:

1. From an environmental justice perspective, which vacant sites pose the highest environmental risks and therefore should be prioritized for redevelopment?
2. Who would be the likely stakeholders to engage in the community planning process?

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3. Given the environmental and community contexts of sites, what are some examples of what a CBA-driven redevelopment project might look like?

The spatial framework established with this project is primarily an advocacy tool for community planners. Given the environmental condition of the community and the push by municipal officials to attract development to the city's underutilized and vacant land, residents in Chelsea will increasingly need tools to ensure a meaningful voice in the re-envisioning and redevelopment of their neighborhoods. Although ultimately the benefits negotiated need to be determined by the residents themselves, this project shows how GIS mapping might be used by environmental justice activists and community planners to begin targeting sites and identifying coalition members for future CBA negotiations.

A. Prioritizing Vacant Land

There is a wealth of land use and environmental data available for Chelsea, MA, including information about parcel vacancy. According to parcel data released by the City of Chelsea's Assessors Department in 2006, there were 538 vacant parcels in the city, totaling 118.5 acres of land (Knapp 2007).

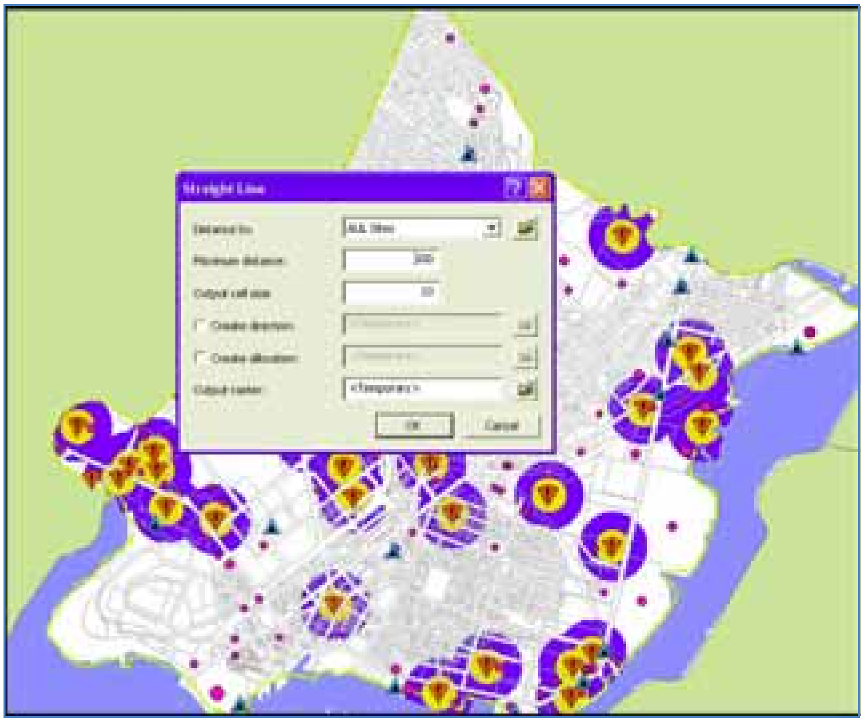
Because of this project's interest in brownfield redevelopment, data related to land contamination and hazardous spills was utilized in order to develop a priority scheme for vacant according to their confirmed and/or suspected contamination status.

The process for analyzing the potential environmental risk of these vacant parcels was conducted according to the following seven (7) steps:

1. Tier Classified C21E sites and Activity and Use Limitation (AUL) sites data layers were downloaded from Mass GIS and added to a map of Chelsea. All sites located within the city's border were selected out, resulting in a list of 15 C21E sites and 28 AUL points. A list of Waste and Reportable Spills was then downloaded from the Massachusetts Department of Environmental Protection (DEP) and added to the map. Roads and parcel data were added to provide context.

2. The **Spatial Analyst** tool was enabled and used to calculate raster distances from each of the environmental points.

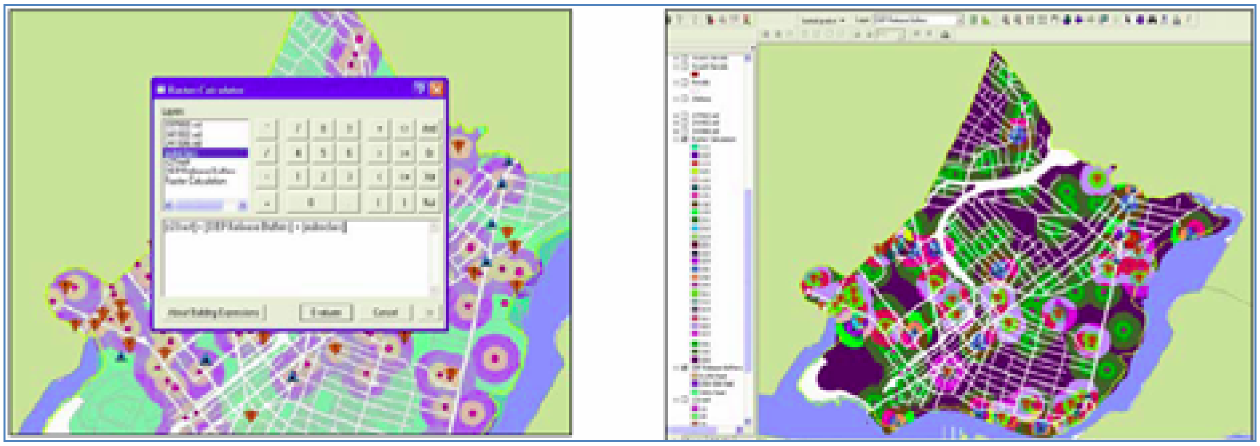
- For each of the three sets (C21E, AUL, and DEP Reportable Spills), a "straight line" distance was calculated;
- "Minimum distance" was set to 500 feet and the "output cell size" set to 10; and
- Values were re-classed so that there were two breaks (0-250 and 251-500) rather than the default five.



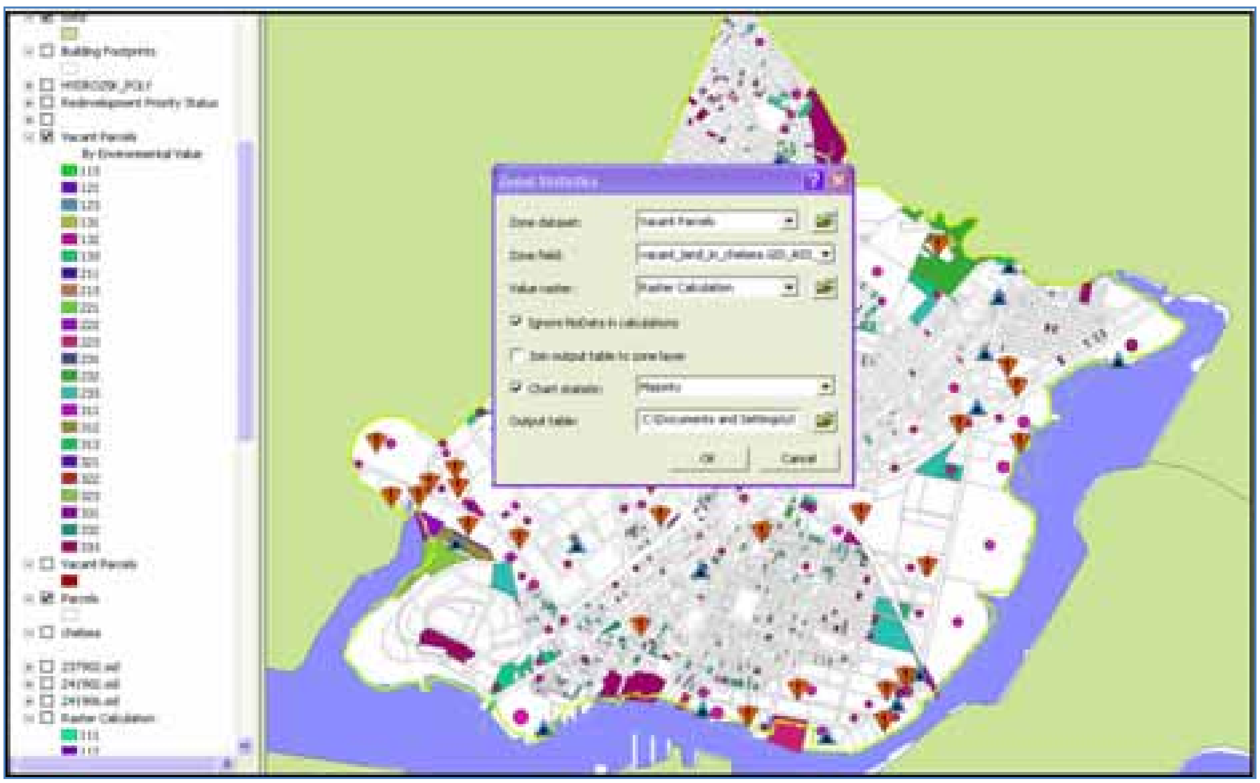
3. Because the goal of the raster analysis is ultimately to add separate calculations together in order to determine the environmental risk associated with vacant sites, it is necessary to clarify what environmental criteria each of the raster values represents. For example, to be able to say "This parcel is within 250 feet of a C21E site and 250 feel of an AUL point" there must be a distinction between AUL and C21E buffers. To this end, each of the three raster calculations were re-classed and given the unique values depicted in Table 1 below.

AUL Points	
Old Values	**New Values**
1 (0-250 feet)	1
2 (251-500 feet)	2
3 (500+ feet)	3
C-21E Sites	
Old Values	**New Values**
1 (0-250 feet)	10
2 (251-500 feet)	20
3 (500+ feet)	30
DEP Reportable Releases	
Old Values	**New Values**
1 (0-250 feet)	100
2 (251-500 feet)	200
3 (500+ feet)	300

4. Following the reclassification, the **Raster Calculator** was used to add all of the different combinations of values together. According to the raster calculation and the new values assigned to the individual data sets, an area within 250 feet of both an AUL point and C21e site, for example, would have a value of 113 (3+10+100).



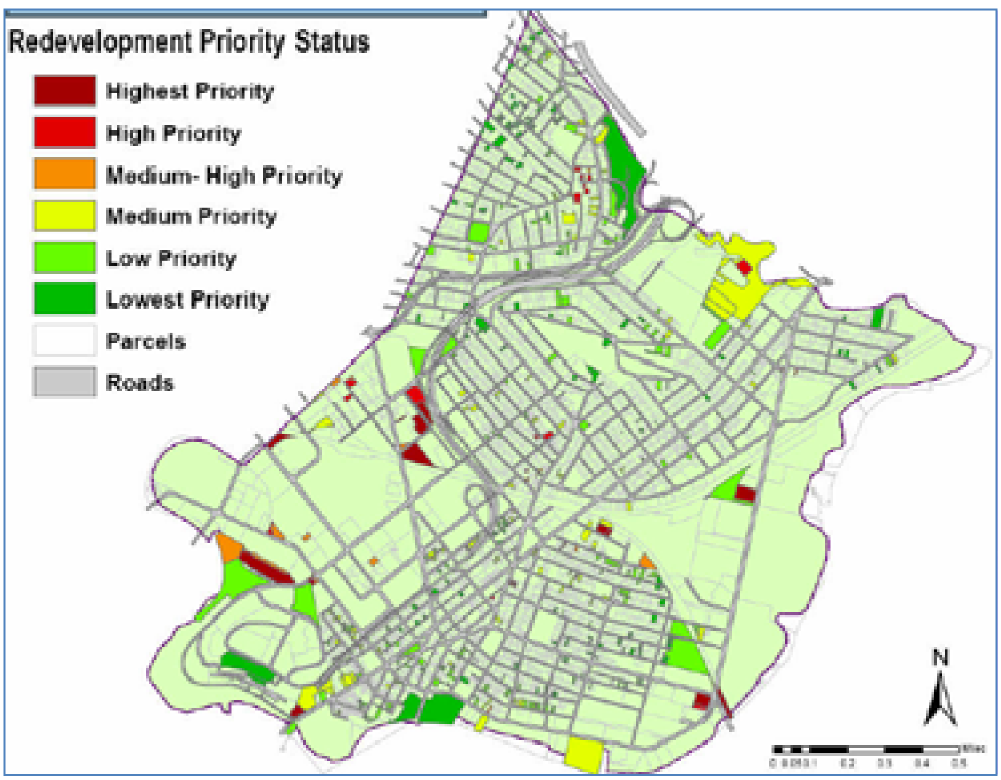
5. In order to determine the values of the vacant parcels, the **Zonal Statistics** function in Spatial Analyst was utilized; fields were filled in as they appear in the image on the next page. Although this analysis is not perfect because some parcels will be assigned overlapping/multiple values, by choosing "**majority**" in the Chart Statistics field, as illustrated below, values are assigned based on which value each parcel falls the *most* within.



6. Once the zonal statistics analysis is complete, individual values need to be **re-grouped** according to the redevelopment priority scheme developed separately. The following table describes the priority scheme criteria and the ways that the raster calculation values were regrouped to reflect the scheme. It should be noted that as a community planning exercise, it is best to have local stakeholders determine their own priority scheme, rather than automatically reverting to the one established in this analysis.

Priority Level	Criteria	Unique Values Included
Highest Priority	Vacant parcel has a documented contamination history (AUL, C21E, or DEP Release)	Separate manual analysis; Parcels matched to points.
High Priority	Parcel is located within 250' of at least two (2) points *OR* 250' of on point and 500' of at least two others	113; 131; 211; 311; 121; 221
Medium-High Priority	Parcel is located within 250' of one point and 500' of another *OR* Within 500' of all three types of contamination documentation	123; 132; 213; 222; 231; 312; 321
Medium Priority	Located within 250' of one *OR* within 500' of two points	133; 233; 232; 313; 322; 331
Low Priority	Parcel is located within 500' of one type of documented release	233; 323; 332
Lowest Priority	Parcel is not located within 500' of any points	333

7. The final step of the priority analysis is to display the vacant parcels according to this priority scheme. In the case of Chelsea, MA, doing so shows that the majority of vacant parcels are unlikely to be currently contaminated but that a number of them have a prior contamination history and/or are located in close proximity to documented hazardous spills and releases. In total, thirteen sites, or 2% of all the vacant parcels in the City, were considered "highest priority." "High" and "Medium-high priority" accounted for 27 sites (5%) and 24 sites (4%), respectively. Nearly a quarter (24% or 127 sites) were identified as "medium priority," while "low" and "lowest" priority sites accounted for the largest segments, with 183 sites (35%) and 162 sites (30%), respectively.



IV. Identifying Potential Community Partners

In order for a community benefits agreement to be successfully waged, many different stakeholders must be identified and brought into the decision-making process. As previously mentioned, there is a small but powerful community development movement growing in Chelsea. Using data from MassGIS, The City of Chelsea's website, and internet searches (Google maps), possible community coalition members were identified and their addresses were geocoded to show their location in relation to the vacant parcels. The following table illustrates the three main types of stakeholders included in the analysis as well as the data sources and mapping processes used.

TYPE	SOURCE	PROCESS
Community Based Organizations	The City of Chelsea's website	Created an Excel file and geocoded addresses.
Schools	Mass GIS; Massachusetts Department of Education	Shapefile; selected out schools in Chelsea
Day Care Centers	Google Maps	Created an Excel file and geocoded addresses.
Hospitals and Community Health Centers	Mass GIS; Massachusetts Department of Public Health	Shapefile; selected out health care facilities in Chelsea

V. Considering Future Development Projects

The final step of this project involves looking closer at the vacant sites alongside the community resources data to begin thinking about what future developments in Chelsea might look like. For example, there are a number of large, high-risk vacant parcels located near Chelsea High School, as illustrated below. Local high school students play a significant role in community organizing and environmental justice efforts in the city, yet there is no specific facility (besides the high school) for them to conduct research. Although the levels of contamination on the sites around the school may exclude some types of remediation technologies and redevelopment proposals, it may be possible to redevelop them into larger facilities such as an environmental education center or a job training center.

Likewise, in areas with parcels that are less risky form an environmental standpoint, it may be possible for a CBA to be negotiated to provide pocket parks, community gardens, or affordable housing, as illustrated on the following page. Ultimately, yhis analysis allows community planners to consider the environmental constraints and opportunities of local vacant land, and to identify community organizations who would have an interest in the end-use of development projects.

VI. Conclusion

The most important thing to keep in mind when assessing this project is to remember that the priority status of parcels does not necessarily correspond to actual contamination on sites. While using the environmental data points is a useful way to represent past environmental spills and releases, this analysis did not take into consider the remediation/cleanup status of individual cases. Nor did it include amounts of exposure/releases, with the exception of organizing the Reportable Releases according to the number of times spills were documented at particular sites.

Rather than point directly to contamination, this priority scheme allows us to consider vacant parcels in an environmental context.   Obviously, redevelopment on any parcel (whether considered high risk or not) should not move forward without a comprehensive site investigation to confirm whether and the extent to which contamination exists. But in terms of initial brainstorming about the types and costs of individual redevelopment projects this priority scheme serves an important function.