

1-1-1999

Redeveloping Brownfields: A Step-by-Step Project Decision-making Guide for Environmental, Development, and Planning Practitioners

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**REDEVELOPING BROWNFIELDS: A STEP-BY-STEP PROJECT
DECISION-MAKING GUIDE FOR ENVIRONMENTAL, DEVELOPMENT,
AND PLANNING PRACTITIONERS**

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Cleveland State University

A TECHNICAL ASSISTANCE SERVICE AND DOCUMENT
PROVIDED BY THE
GREAT LAKES ENVIRONMENTAL FINANCE CENTER

April 1999

FORWARD

Cities nationwide are struggling to respond to the challenge of providing new clean land for future development. For most communities, this is the heart of the brownfields redevelopment issue. This is a formidable challenge for any city. The Great Lakes Environmental Finance Center's (GLEFC's) new guidebook, *Redeveloping Brownfields: A Step-by-Step Project Decision-Making Guide for Environmental, Development, and Planning Practitioners*, makes this job much easier for professionals working to make their cities more competitive and attractive for future development.

The author, Dr. Robert A. Simons, has provided practitioners with the essential planning and analysis tools to make better financial and policy decisions about its brownfield sites. Dr. Simons' research and educational work in the brownfields arena is known nationally and internationally. His background in real estate, planning, and finance make this guidebook relevant reading to a wide range of environmental, development, and planning professionals.

A special thanks to Kirstin Toth and A. J. Magner for contributing to the case studies included in the guidebook. We would also like to acknowledge the information provided by the St. Paul Port Authority and the City of Cleveland for their case studies.

By design, the guide was developed as a working tool to help those communities that the Great Lakes Environmental Finance Center assists in the Great Lakes region. While the guide is oriented to Great Lakes communities and states, it offers great value to communities and states of any size in any region of the United States. The thought process imparted by the guidebook and the basic tools described will help any professional working with brownfields.

A word on how the guide should be approached and used. The book is organized into three overall parts. Section A provides a primer on brownfields redevelopment that is essential reading for all concerned. Sections B-E contain in-depth information on real estate, cleanup, financing, and other strategic issues related to brownfields redevelopment that provide valuable detailed methodological and strategy information. These sections may be read as separate resources on these issues. Section F contains some informative case studies that illustrate the entire decision-making process associated with brownfields redevelopment. The selected cases give special attention to financial packaging, an area of great concern to most brownfields redevelopers.

The guidebook may be used in conjunction with GLEFC's Internet web site, located at <http://www.csuohio.edu/glefc>. The guidebook can also be downloaded from our web site. Updated information related to the guidebook will be posted to the web site, as it becomes available.

Congratulations to Dr. Simons on a successful contribution to the brownfields redevelopment field. GLEFC and Cleveland State University would like to thank the

United States Environmental Protection Agency for its generous financial support, allowing GLEFC to develop this beneficial tool.

Donald T. Iannone
Executive Director, Great Lakes Environmental Finance Center

ACKNOWLEDGMENTS

I would like to thank Cleveland State University and the Great Lakes Environmental Finance Center (GLEFC) for their support of this project. I would also like to thank Don Iannone for his support, motivation, and comments. I am also grateful to the GLEFC staff who helped put this guide together: David Weilbacher, who was a major contributor to this project; A.J. Magner, who was a contributor and provided the Cleveland case study; Kirsten Toth, who provided the St. Paul case study; Susan Petrone, who edited a late draft; Wendy Nicklow; Joann Cencula, who rescued the final draft; Olga Lee and Monica Gramsz who fine-tuned and prepared the document for final publication; and, David Toth, who organized the web-page layout.

INTRODUCTION

The Purpose of This Document

This technical manual is oriented toward public and economic development practitioners in the six Great Lakes States who have a brownfield problem. It features brownfields in the context of a real estate development and investment decision model. The manual and service are informational, instructional, and dynamic, utilizing GLEFC's web site to update key inputs. It is a service: a process, rather than just a product. This hybrid guidance document interacts with brownfield redevelopers in three ways:

1. There is a written document outlining the service provided to our clients.
2. There are three case studies or three common brownfield redevelopment scenarios to provide users with a model. These cases are tied to the decision steps shown below.
3. Technical Sections on a number of specific real estate and brownfield topics. Access to updated information for more realistic and site specific figures are provided in the GLEFC web site. Some numbers are provided directly, others through hyperlinks to original data sources.

Because there is the possibility of market failure, we assume the reader will either ask for local public assistance or is in a position to provide it. We will briefly introduce the idea of market failure and decision rules for fair allocation of public funds, which encourage redevelopment by the private sector to normal industry profit standards, while avoiding the over-subsidization of redevelopment.

Organization

This guide presents a primer on brownfield redevelopment issues, demonstrates the steps in brownfield redevelopment, provides several cases which demonstrate computerized spreadsheets, and offers a comprehensive set of examples for each section or step in the brownfield redevelopment process.

Typical activities of the target market (in order of importance) would be:

Facilitation of private development

1. Acquisition, assembly, remediation, and sale of a property for private redevelopment
2. Acquisition and development of land and structures as a rental property
3. Conversion of an empty building

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GLOSSARY OF TERMS

BTEX	benzene, toluene, ethylene, and xylene from petroleum/gasoline contamination
Brownfield	A formerly industrial or commercial site that is prevented from attaining its highest and best use due to perceived or actual environmental contamination
Cap	Containing contamination on site with a protective top layer or barrier (also encapsulation, which covers the bottom and sides as well as the top layer)
CDBG	Community Development Block Grant
CERCLA	Comprehensive Environmental Response Compensation & Liability Act
CNTS	Covenant Not To Sue
DSC	Debt Service Coverage
EmZ	Empowerment Zone
IDB	Industrial Development Bonds
IROR	Investment Rate of Return
LTV	Loan To Value Ratio
LUST	Leaking Underground Storage Tank
MOU	Memorandum Of Understanding, also MOA
NDIF	Neighborhood Development Investment Fund
NFA	No Further Action Letter
NPI	Neighborhood Progress, Inc.
NPL	National Priorities List (US EPA Superfund List)
NPV	Net Present Value
NFRAP	No Further Remedial Action Planned
PAH	Poly Aromatic Hydrocarbons
PPA	Prospective Purchaser Agreement
PRP	Potentially Responsible Party
RA	Remediation Applicant
R&D	Research and Development
RCRA	Resource Conservation and Recovery Act
PMA	Primary Market Area
RP	Responsible Party
RBCA	Risk-Based Corrective Action
REIT	Real Estate Investment Trust
SF	Square foot

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Stigma	A reduction in brownfield market value above and beyond the cost of remediation
TIF	Tax Increment Financing
UST	Underground Storage Tank
US EPA	United States Environmental Protection Agency
VAP	Voluntary Action Program
VISIONs	Vital Investments Serving in Our Neighborhoods
VOC	Volatile Organic Compounds
VCP	Voluntary Clean-up Program

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SECTION A: PRIMER ON BROWNFIELDS REDEVELOPMENT

Brownfield redevelopment can be characterized as a real estate development project that is likely to have limited demand, large site preparation costs, and potentially substantial uncertainty in obtaining financing. The clean up associated with site preparation is almost certain to involve a state regulatory agency. Like any real estate development project, brownfield redevelopment involves strategic timing and probably financial leverage to be feasible. Because of increased costs and public urgency associated with doing nothing, public subsidies and market failure are present, which justifies some form of government intervention.

There are other problems that occur more frequently with brownfields and the areas in which they are located. These may include environmental stigma and lack of market clearing land prices. In some communities, especially those that have experienced a substantial loss in the industrial base, there may be a political reluctance to rezone brownfields in the hope that old jobs may come back.

STEPS IN BROWNFIELD REDEVELOPMENT

Figure 1 contains a flowchart with a brownfield project compared to a normal real estate deal. The generic steps in brownfield redevelopment are set forth below and provide the backbone of step-by-step case studies later. For a nonprofit developer seeking to assemble a parcel for a real estate project that may include a brownfield, the steps include:

1. Highest and Best Use and Market Studies
2. Fatal Flaws: scoping the state Voluntary Cleanup Program and range of outcomes
3. Preliminary remediation/financing plan
4. Controlling the site and site assembly
5. Remediating the site
6. Design and liability-reduction strategies
7. Sweetening the deal with public funds
8. Analyzing the subsidy: Benefit/Cost Analysis
9. Obtaining permanent financing for others
10. Sale of building site to the development entity
11. Monitoring contamination and preserving the remediation closure document

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PAST DIFFICULTIES IN REDEVELOPING BROWNFIELDS

There were several reasons why brownfields have been very hard to redevelop: cost, risk, and lack of demand. Cost refers to the additional expense required to clean up contaminated land as part of the site preparation process. Risk addresses the unknowns concerning the adequacy of the remediation process from the perspective of the owner, regulators, end users, and lenders. Lack of demand addresses the large number and often uncompetitive nature of unassembled brownfield sites with respect to limited demand for real estate in a market area.

Cost of Cleanup— The cost side reflects the actual or perceived cost to clean the site to acceptable standards (assuming they are known). Because the net price of urban land with possible contamination from prior use (for example, a three-acre industrial parcel in a Midwestern city with all utilities available valued at \$2 per square foot, plus expected clean up costs of \$4/SF for a total cost of \$6/SF) would be higher in price than a comparable suburban property on virgin farmland (greenfield, with a land price of \$4/SF, inclusive of utilities, and no clean up cost), urban sites have long been overlooked based solely on cost. Formerly, the only way to finance a brownfield was to haul away all possibly tainted soil to a landfill and bring in fill dirt that was "clean enough to eat." Of course, this exorbitant cost killed all but the rarest of real estate deals (e.g., a small part of a larger commercial project site assembly in a prime location). This cost factor does not speak to additional risks, fear of crime, small parcel size, or other concerns.

Reduction of Liability— The second major reason most brownfields have sat vacant for years is liability. As of the mid-1990s, any party involved with a brownfield could typically be held liable for the clean up, regardless of who actually contaminated the land or whether or not there was knowledge of the contamination. This is the so-called "strict, joint, and several liability" clause under the Comprehensive Environmental Response Compensation & Liability Act and SARA Superfund legislation managed by United States Environmental Protection Agency (US EPA). Liability had traditionally included lenders, if they chose to foreclose on a defaulted loan and take possession of a property. Also, the stigma associated with uncertainty about cleanup problems and the value of the contaminated real estate as collateral for a potential loan meant lenders were reluctant to extend credit without a large emphasis on borrower credit worthiness. All of these factors explain, in large part, why very few brownfield properties have been redeveloped over the past few decades.

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Demand for brownfield sites is uncertain— As brownfield development moves out of the hands of environmental regulators, who consider the remediation of a contaminated site to be the end of the process, to the hands of private and public real estate developers interested in economic development and profit, the issue of demand for sites becomes the next hurdle. There are so many brownfields that most will not be redeveloped within our professional lifetimes. Further, regardless of how clean the site is, some brownfields are economically obsolete unless there is new road and infrastructure investment and parcel assembly into marketably sized development parcels. Even smaller, formerly industrial parcels, which would now be well-located to serve housing needs, would compete poorly on price because they would be more expensive to remediate for housing uses under the new RBCA rules in many states. Fully half of the existing urban brownfields in the US may be best suited for long term interim uses, permanent open space, parkland, or buffers between incompatible land use. In some communities, city leaders may become convinced that there are no feasible alternative uses for brownfields. At that point, brownfields could be rezoned. Then, concentrated support of brownfield redevelopment can be directed into the most competitive areas, while others revert to lower intensity uses.

GRIDLOCK IN BROWNFIELD REDEVELOPMENT

The cumulative effect of liability and other concerns has been a gridlock in the redevelopment of brownfield sites. The old "dig and dump" approach of hauling out the debris and bringing in clean fill dirt is simply too expensive for all but the most select group of well-located and easy-to-remediate sites. Possible brownfield developers and lenders have been scared off by the strict, joint, and several liability concerns where anyone in the chain of title could be liable for any or all contamination on site, whether or not they caused it or contributed to its current condition. From the regulators' perspective, US EPA is still involved, and many state programs are incomplete or have not yet been tested.

With some notable exceptions, there has been market failure for brownfields, which local governments may be able to rectify with appropriate subsidies to counteract the empty pockets of inner city land. The risks of redeveloping brownfields have not been quantifiable, so environmental insurance and lending capital has not been available at reasonable cost. Banks have generally avoided brownfields, at least not under regular real estate lending practices where the real estate secures a mortgage at a loan to value ratio of 0.7-0.8. Demand for brownfields is uncertain, and in cities with a history of substantial industrial decay, some community leaders are hesitant to give up the idea that the old jobs are coming back, and generally avoid systematic analysis of brownfields or the rezoning of brownfields to their current best use. This inaction has allowed the oversupply of brownfields to persist, softening the price of brownfields land.

The combination of the above factors has meant that otherwise worthy projects have not been redeveloped; this is an indication of potential market failure and justifies

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government intervention. New state voluntary clean-up programs (VCP), which create information about site conditions, reduce uncertainty, and in some cases provide financing support for redevelopment activities, are beginning to alleviate the problem. Thus, the time is ripe for substantial redevelopment of brownfields in the Great Lakes Region.

TYPES OF CONTAMINATION: SOIL AND GROUNDWATER PROBLEMS

Brownfield contamination can be broadly separated into two categories: those problems that affect only soil and those that affect both soil and groundwater. It is rare when only groundwater is affected on the contaminated site, but possible when contamination has migrated from adjacent sites onto the property. The brownfield solution for a soil contamination problem is site-based. While some groundwater contamination problems can be dealt with on a site-only basis, they often require an area-wide solution to obtain closure. SECTION C, titled "Site Remediation Techniques," provides a detailed accounting of several of the more popular remediation techniques, their costs, and sources of current data about brownfield remediation issues.

Soil contamination— Soil contamination is generally contained on site and is easier, but not necessarily less expensive, to remediate than groundwater problems because the problems do not migrate. Denser soils such as clay or silt tend to act as barriers, so contamination stays close to where it was released, thus localizing any clean up effort. Looser soils such as sand and gravel, on the other hand, allow contamination to migrate and can be problematic. Quick action is especially important with these types of porous soils because a localized problem can become an area-wide concern if neglected. Types of soil contamination problems (roughly in order of severity and cost to remediate) include hydrocarbons such as poly aromatic hydrocarbons and volatile organic compounds from storage and handling of organic materials; petroleum-based substances such as benzene, toluene, ethylene, and xylene (especially the "B" Benzene); heavy metals such as lead, chrome, and nickel used in plating or other industrial processes; and PBCs from electrical transformers. The combination of several of these categories is also common. The general approach for dealing with these substances is to segregate out the contaminated portions and either perform on-site remediation (e.g., for volatile organic compounds), encapsulate the contamination, and/or remove high concentrations of the substance for burial at an appropriate landfill. In most cases, soil contamination is a one-time remediation effort, with little or no ongoing monitoring, assuming the cause of the contamination is no longer active. Hence, VCP closure for soil problems is often readily attainable.

Groundwater contamination— Groundwater contamination is usually problematic for brownfield developers. It is not uncommon for "old" contamination to have migrated

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through the site and even to adjacent properties. Further, because recontamination from polluted urban groundwater can occur despite the reasonable best efforts of a brownfield redeveloper, keeping the site clean enough for regulators and site occupants is not always possible. Hence, groundwater contamination is essentially an area-wide problem. The most common type of groundwater contamination is from underground storage tanks and on-site distribution systems, which typically contained gasoline or other petroleum products. On-site treatment is usually possible, and substances can often be recovered by installing extraction wells for a period of up to several years. However, VCP closure on groundwater problems is harder to obtain and may take much longer than closure for soil-based problems. Sometimes, the best solution is to cap the contamination with a parking lot and build above the problem. With groundwater contamination, ongoing water quality monitoring can be expected.

NUMBER OF SITES IN EACH STATE AND MAJOR CITIES

There are two broad types of brownfield sites: listed and unlisted. Some inventory figures for listed sites in the Great Lakes Region are provided below. These include mostly leaking underground storage tanks and other sites which have been investigated or placed on one of the dozen or more federal or state lists of contaminated property. Some of these sites are a substantial public health hazard. Most, but not all, of these sites are actually contaminated. The Great Lakes states contained in excess of 87,000 different listed sites as of mid-1996.

Unlisted sites may include vacant land, underutilized buildings, and similar properties that are not known to be contaminated, or are known to have milder problems. Thus, many of these sites have at least the perception of possible contamination, based upon prior use of the land. At least 20,000 unlisted sites are present in eight of the largest cities in the six-state region. Therefore, a conservative estimate of the number of brownfield sites in the USEPA Region V area (Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin) is 107,000. The rest of this section describes and breaks down these figures.

Table 1 Number of Brownfield Sites in Selected Great Lakes Cities by Type

City	Industrial Brownfield Sites	Industrial and Commercial Brownfields (Acres)	City Land in Nonresidential Brownfields (Percent)	Residential Brownfields (Acres)	City Land in All Types of Brownfields (Acres)	Total City Land in Brownfields (Percent)
Chicago, IL	9,098	13,377	9	5,058	18,435	13
Detroit, MI	4,939	6,849	8	6,737	13,587	15
Cleveland, OH	2,626	4,067	8	2,656	6,723	14
Milwaukee, WI	1,194	1,912	3	259	2,171	4
Minneapolis, MN	1,030	1,422	4	489	1,912	5
Cincinnati, OH	866	984	2	491	1,475	2

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Akron, OH	147	563	1	263	827	2
St. Paul, MN	210	320	1	-170	151	0
Total	20,110	29,494	36	15,783	45,281	56

Source: Robert Simons

Note: Negative number indicates redevelopment of brownfields.

LISTED BROWNFIELD SITES

There are numerous lists of brownfield sites in the US. The environmental consulting firm Environmental Resources Information and Imaging Services (ERIIS), located in Herndon, Virginia, has compiled a current list of all the sites on the various government lists by location. Unless otherwise stated, the number of sites reflects the best available data as of October 1996 (usually March-September 1996, depending on when a particular list was updated). These listed sites are covered briefly below. Overall, the US contains some 384,000 different listed sites.

The NPL and Superfund sites— The national priorities list (NPL) is kept by the US EPA. In its broadest sense, the nationwide list has contained as many as 40,300 sites, although some were recently downgraded when investigation showed contamination was not severe. These sites become known to USEPA through RCRA permits, identification by state EPAs, and citizen complaints. This three-tiered database, cumulative since 1980, is known as the CERCLIS (NPL Candidate) list.

The most polluted known sites in the Region V area are the 272 NPL Superfund sites. Realistically, very few, if any, are viable for near-term brownfield redevelopment due to perceived public health problems, excessive clean up costs, and long time frames, and strict, joint, and several liability to anyone in the chain of title. However, clean up on a select few of these sites has been completed.

CERCLIS Sites— The middle tier of this US EPA database is the Comprehensive Environmental Response Compensation & Liability Act. These are possible future NPL sites, currently supervised by the US EPA. Their status on the CERCLIS list is transitional: depending on what investigations reveal, they may eventually be upgraded to Superfund or delisted to the lower category, No Further Remedial Action Planned (NFRAP). Until they are further classified, most CERCLIS sites are of little interest to developers. There are 1,435 CERCLIS sites in the Region V area.

In order to determine whether a site goes from CERCLIS to NPL or NFRAP, the US EPA evaluates each site individually based on predetermined criteria. The US EPA hazardous ranking system, formally in place since 1990, evaluates the observed, actual, or potential negative effects of the contamination on the site on groundwater, surface water, air, and soil. Typically, regional US EPA offices conduct a preliminary site

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assessment to see if the sites could obtain the threshold score of 28.5, which would make it a candidate for the NPL. If needed, site sampling is performed. If the site scores below a 28.5, it is put on the NFRAP list, and referred back to the state EPA for further attention.

NFRAP Sites— The US EPA delists sites from the CERCLIS list when there is no further interest in them as potential NPL sites. There are 5,672 of these delisted sites in Region V. Such sites are typically (the average size in Cuyahoga County, Ohio was eight acres), and they often have owners with “deep pockets.” Some of these sites could be of interest to real estate developers.

State Hazardous Waste Sites (HWS)— Individual states also keep lists of hazardous waste sites. In most cases, these lists are the same as the federal ones and those kept by the state UST regulator, with few sites not listed elsewhere. However, when sites listed elsewhere are excluded (those without a US EPA ID number), the entire Region V states combined have an estimated 5,490 on their state lists.

RCRA TSD Sites— The Resource Conservation and Recovery Act (RCRA) has created the Resource Conservation and Recovery Information System site tracking system through which hazardous materials are tracked from cradle to grave. Businesses with sites in this system are on the Toxic Release Inventory (TRI) list. Many of these sites are not brownfields, but simply use or handle regulated materials, and some may have released regulated materials into the air or water. However, a portion of these, the RCRA Treatment, Storage, and Disposal sites (TSD), receive materials from other RCRA sites. Basically, these 694 sites in Region V are hazardous waste landfills. Of the TSD properties nationally, about half (those on the RCRA corrective action site list) were undergoing some type of corrective action as of mid-1996. These properties present few opportunities for redevelopment.

Leaking Underground Storage Tanks (LUSTs)— A part of the RCRA requires states to track and improve the management of underground storage tanks (USTs). Virtually every state now keeps a list of these sites, which include many operating businesses with USTs that have not leaked. In addition to the list of sites with tanks, there is another (overlapping) list containing only sites known to have leaked. The number of LUST sites in US EPA Region V is 66,526. This total LUST figure does not include orphan tank sites, i.e., those sites where the regulating agency is not aware of the location or nature of the old tank system. According to another study in Cleveland, the estimate for orphan sites was higher in the central city, where at least one third of the actual sites were not known to BUSTR, the Ohio UST agency. In the suburbs, the situation was much better: an estimated 90 percent of the sites were known (Simons 1995). Because of their corner locations, many LUST sites present excellent opportunities for redevelopment.

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Solid Waste Facilities (SWF)— These are solid waste, hazardous waste, construction and demolition debris, and resource recovery landfills in each state. They are typically fairly large in size (i.e., over ten acres). However, these sites are not generally on the RCRA TSD list. Some landfill sites would be of interest to developers. The estimate of SWFs in the Region V states is 10,260.

Total Listed Sites in the Great Lake Regions— As seen on Table 2, by netting out the double counts and system, ERIIS revealed a total estimate of 87,350 unique listed sites in the US, as of September/October 1996. These estimates are believed to be accurate to the nearest 25 sites for each state. The breakdown is dominated by LUST sites, which represent over two-thirds of all listed sites. Solid waste landfills were over ten percent of the total. State hazardous waste sites are also fairly common. The US EPA group, including NPL, CERCLIS, NFRAP, and RCRA TSD sites combined, are less than ten percent. Unlisted sites are estimated from several published sources. These include the 1996 US Mayor’s study, Simons and Iannone (1997), and the recent GLEFC benchmark assessment. These sources tend to under-report and/or self-report brownfields. Simons’ study (1998) for 31 larger US cities is based upon economic base contraction analysis, which is not self-reported.

**Table 2 Number of Brownfield Sites in Selected Great Lake Cities
By Classification Status**

STATE	NPL	CERCLA	NFRAP	HWS	TSD	LUST	SWF	FINAL*
Illinois	38	414	1,226	707	211	13,096	3,430	18,400
Indiana	35	279	1,316	91	126	4,056	160	5,975
Michigan	80	218	1,447	2,897	76	7,546	1,941	13,425
Minnesota	43	74	383	204	38	8,621	454	9,560
Ohio	35	312	988	1,448	199	19,739	169	21,775
Wisconsin	41	138	312	142	44	13,468	4,106	18,128
Total	272	1,435	5,672	5,489	694	66,256	10,260	87,350

FEDERAL AND STATE APPROACHES TO REMEDIATION OF CONTAMINATED PROPERTY

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Although industrial and hazardous waste disposal practices were largely unregulated for nearly a century, once it became evident that federal involvement was needed, that federal presence came with a vengeance. Congress passed RCRA in 1976 and CERCLA in 1980. Along with the Superfund reauthorization legislation (SARA), these statutes provide an aggressive federal program for remediating contaminated sites and ensuring that waste disposal operations are safe and in accordance with strict standards. The lead agency for these programs is the United States Environmental Protection Agency (US EPA). A more comprehensive discussion of the federal material is also available in a chapter by Professor Wendy Wagner in *Brownfields: A Comprehensive Guide to Redeveloping Contaminated Property* (published by the American Bar Association by Davis and Margolis, 1997).

The Resource Conservation and Recovery Act (RCRA)— The primary purpose of RCRA is to regulate the generation, transport, treatment, and disposal of hazardous wastes from “the cradle to the grave.” RCRA also created the mechanism to regulate underground storage tanks (USTs), which store gasoline and other hazardous substances. RCRA's other main component provides authority for governments or citizens to require cleanup at sites, “which may present an imminent and substantial endangerment to health or the environment.”

The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), (and its funding reauthorization, SARA) establishes an elaborate liability scheme for the remediation of virtually all contaminated properties. CERCLA liability is often referred to as strict, joint, and several. Historically, this liability structure has been a major impediment to brownfields redevelopment because liability was attached to anyone in the chain of title, including lenders if they chose to foreclose on a defaulted loan. At the end of 1996, the US Congress acted to ameliorate certain lender liability concerns by passing an amendment to CERCLA that provides "safe harbor" from federal liability primarily to lenders, trustees, and other fiduciaries. CERCLA also spawned the creation of the National Priorities List (NPL) of sites with the worst health risk. Where private parties cannot be found to finance or perform these cleanups, the US EPA is authorized to use money from the Superfund. Sites where no further remedial action is planned (NFRAP) are turned over to the states for follow-up action, a trend consistent with the development of voluntary cleanup initiatives.

Parallel State Superfund Programs— Many states have developed their own "mini-CERCLA" statutes. These statutes typically provide the state with the authority to force PRPs to undertake cleanup at contaminated sites and establish a state fund to finance state-led cleanups when immediate action is necessary to protect the public health and environment or when solvent responsible parties cannot be located.

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Other Government Agencies Involved in Brownfields— Finally, there are a few other agencies that may be tangentially involved in brownfields. For example, OSHA is a federal agency that sets standards for occupation safety at job sites. This agency regulates worker exposure to certain substances including asbestos. However, while OSHA sets and assists in the enforcement of exposure standards, it does not generally regulate site cleanups or grant closure letters. A succinct summary of asbestos laws and rules, especially pertaining to friable asbestos, is found in Miller (1997, Chapter 2, ULI).

GREAT LAKES VOLUNTARY CLEANUP PROGRAMS

Nationwide, over 30 states had initiated some form of voluntary cleanup program (VCP) through mid-1997. All six Great Lakes states have recently enacted a VCP that encourage brownfields cleanup and redevelopment. Voluntary programs are gaining in popularity because they allow private parties to initiate cleanup and work cooperatively with state agencies, thus avoiding some of the costs and delay that would likely occur if the sites were subject to enforcement-driven programs. The programs have the following key elements:

1. The use of risk-based corrective actions (RBCA) to form the basis for remediation, including explicit standards for the presence of certain substances, and allowance for site and end-user characteristics;
2. The availability of no further action (NFA) or other closure letters and governmental liability releases in the form of covenants-not-to-sue (CNTS);
3. The presence of a memorandum of understanding (MOU) between the state which has established a VCP and the federal government (US EPA);
4. The establishment of financial inducements to encourage brownfields redevelopment, including loans, grants, tax credits, property tax abatement, and other local initiatives;
5. The presence of state codified lender liability exemptions; and
6. The overall depth and comprehensiveness of a particular state's VCP.

Risk-based Corrective Action Standards (RBCA)— Explicit and flexible standards are critical to keeping remediation costs down and lending certainty to the finality of the cleanup process. The best programs not only include investigation procedures, but specific maximum standards for each contaminant and for combinations of contaminants after cleanup. A good RBCA program should also consider specific site conditions, such as soil type, groundwater, and background contamination levels. The end use of the site should also be considered. Progressively cleaner standards for land uses, such as industrial, commercial, and residential development, should be stated.

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The most flexible standards allow for caps (e.g., under parking areas), the removal of contaminated hot spots, and no further remediation under certain conditions. All six Great Lakes states have implemented some form of RBCA scheme. Table 3 shows the ranking of each state on these programs.

Table 3 State Rankings

Each component is described below. The source of this information is Turning Brownfields Into Greenbacks, Chapter 3. The effective date of this table is Summer 1997.

State	Depth of VCP	NFA	CNTS	MOU	Liability Exemptions	Financial Inducements	RBCA	Overall*
Illinois	4	4	1	5	4	1	4	3
Indiana	4	4	5	5	4	2	4	4
Michigan	5	4	5	5	5	5	4	5
Minnesota	4	4	4	5	4	4	4	4
Ohio	5	4	4	2	4	3	4	4
Wisconsin	4	3	3	5	4	3	3	4

Note: 1=nothing; 2=pending, 3=fair, 4=good, 5=excellent

State Closure Letters (NFA)— These letters serve to notify developers and lenders that the site remediation is complete. There are two levels of assurance. The weaker form is the no further action letter (NFA), which states that no further action is required on the site regarding the remedial action just completed. It does not address any other contamination on site. This type of closure letter may also be called a certificate of completion, letter of completion, no additional action letter, or some other similar name. It is usually issued by the state agency running the VCP, but in some states (notably Ohio) it is issued by a certified private consultant.

Covenant Not To Sue (CNTS)— Stronger than the NFA is another form of assurance, the covenant not to sue (CNTS), which is usually issued by the lead state agency or state attorney general. The CNTS (hopefully) binds all other state agencies (and sometimes local jurisdictions within the state) not to sue in the future, subject to certain conditions, or “reopeners.” These closure letters are closely related to liability exemptions, which are discussed below. All the Great Lakes states offer a CNTS, and some NFA letters may also serve this function.

The fine print on these reopeners can potentially reduce the value of the CNTS to a developer or a lender. Most states have reopeners for fraudulent activity or for a future change in land use. These provisions are reasonable because they are under the developer's control. If the site was remediated under a risk-based corrective action

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(RBCA) scheme tied to a proposed use, at least nine states require that a deed restriction be recorded on the property. The land use re-opener is really a lesser problem, because it does not come into play unless the site changes use. It may, however, reduce the market value of the property and therefore affect the quality of the collateral for a lender.

However, some re-openers are more onerous. For example, seven states, among them Indiana and Minnesota, have CNTS re-openers for prior undiscovered contamination. A few states have re-openers for a change in the economics of remediation or for a future change in cleanup standards (e.g. Minnesota). A CNTS issued in these states has less value because substantial uncertainty still exists about the closure of these sites.

Memorandum of Understanding with US EPA— This important intergovernmental agreement (MOU) addresses whether or not the state-issued CNTS or other closure letter is also binding on the US EPA. In actuality, each of the ten US EPA regional offices make their own arrangements with their respective state VCP administrators. Generally, the position of the US EPA has been not to issue a direct US EPA CNTS for each site managed by a state VCP. This would put the agency in the loop on each brownfield remediation project, swamp the US EPA with an excessive amount of paperwork, and delay final remediation approval. If the US EPA did issue these letters, then developers and lenders would want them on all sites. Therefore, the US EPA is not ever "bound" by a state VCP's CNTS. In principle, the US EPA must leave themselves a way back into the remediation process, through a re-opener, if there is major new scientific evidence concerning carcinogenic materials, etc. Whether lenders can live with this uncertainty is the crux of the value of the CNTS.

The best language available thus far is in US EPA Region V, where the US EPA has signed MOUs with five of its six constituent states. The Ohio Voluntary Action Program (VAP) is undergoing discussions with the US EPA about their program's MOU. The language conveys the US EPA's intention not to take further action unless there is an "imminent and substantial threat" to human health or the environment, or under "emergency or exceptional circumstances." Without an MOU, a successful remediator can always try to get a non-binding "comfort" letter from the US EPA regarding the site.

Liability Exemptions— Liability exemptions are a key component of each states' VCP. Exemptions are usually available for potential lenders, new owners, and, in rare cases, from lawsuits by third parties. In many states, liability exemptions are not available for potentially responsible parties (PRP) or other known polluters. In others, PRPs who volunteer to remediate their properties may obtain the exemption.

Lenders have traditionally avoided new lending on brownfields because of concerns about strict, joint, and several liability under CERCLA. This fear was further exacerbated by the infamous Fleet Factors case, which caused substantial anxiety in

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the lending community and helped dry up debt capital for contaminated properties for several years in the early to mid-1990s. As recently as a few years ago, lenders with non-performing loans were declining to foreclose, letting defaulted borrowers keep the keys to the building, and writing off the loan as uncollectable. In states with no explicit lender liability exemptions, the CERCLA or state equivalent level of lender liability is generally in effect.

The first line of defense for the lender is the quality of the NFA or CNTS issued to the owner or operator. In addition, the fewer re-openers and the better the MOU, the more likely that the owner or operator will be able to manage any future contamination expense while maintaining the debt service coverage ratios at a comfortable level and avoiding foreclosure.

In the event of mortgage default and lender foreclosure, the new lender liability exemptions under state laws should be helpful. However, the key in these statutes is the language concerning the management activities lenders may undertake after foreclosure. If the restrictions on lender behavior after foreclosure are too restrictive, lenders may not be able to minimize their losses (i.e., maximize the sales price of the foreclosed property) while maintaining the liability exemption. Therefore, the value of the real estate (as collateral) going into the loan may be discounted, requiring more developer equity (and reducing the rate of return), or even killing the deal. Eleven states have explicit lender liability exemptions that should protect them if they have to foreclose on the property, manage the property during a reasonably brief period for the purpose of selling it, and do not cause additional contamination to be released. Another 11 states have lender liability exemptions, but the definition of "management" during foreclosure appears to be somewhat narrow. A few others are just starting up programs and developing lender liability exemptions. In all states, the new federal lender and trustee liability protection provisions (discussed earlier in this chapter) apply.

Also popular are the liability exemptions for new owners. These exemptions are tied to the quality of the NFA or CNTS, and whether or not there is a MOU in place. All six Great Lakes states have very substantial new owner liability exemptions available for new owners who successfully complete remediation. With very few exceptions, those owners who can't complete remediation do not receive a liability exemption.

Financial Inducements— These incentives may include loans and grants funding for site assessment and site remediation, or indirect incentives such as tax credits or tax abatement. Unfortunately, these programs are not as widely used as they could be. Several states, including Michigan, Minnesota, Ohio and Wisconsin in Region V, fund either site assessment and/or remediation. These states have had a significant number of sites clear their VCPs.

A few states offer tax incentives directly to end-users to provide remediation expenses after the cleanup is over. For instance, some states offer investment tax credit,

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applicable to the corporate income tax (e.g., Ohio-10%, Wisconsin-50%, and Illinois-25%). Low interest loans are offered for remediation in Ohio, Wisconsin, Indiana, Michigan, Minnesota, and Illinois (through Cook County and City of Chicago). Considering the developer's preference for grants (brownfields usually cannot support more debt), loans may not be that helpful, especially for new developments. A few states also have local property tax breaks for brownfields. However, because Enterprise Zones (which offer similar property tax abatement programs) already exist all over the country, the relative importance of these programs for brownfields is likely to be small. Three other states have financial inducement proposals pending. Also, as of July 1, 1997, several federal brownfields legislative proposals containing tax credits and other financial incentives have been introduced.

Who can participate? — VCPs are oriented to owners with no potential responsibility for the contamination. In general, PRPs with pending enforcement actions are generally excluded from entering VCPs, and many, including Ohio, exclude sites with exclusive UST problems from participating in VCPs, although some states allow UST sites to participate if they also have other forms of contamination. Wisconsin excludes parties from participating in the VCP if they are found to have recklessly or intentionally released contamination.

Other issues— Most states charge VCP participants for the cost of managing or reviewing the cleanup process. Most states also have an explicit fee structure, with the typical cost being \$2,000 to \$5,000 at the outset plus another few thousand during the process. Some states charge between \$50-80 per hour for staff time to review documents and guide remediation efforts.

Five states explicitly have a public participation component, which typically allows public comments on remediation procedures early in the process. This component is important so that neighboring stakeholders, if any, can be brought in earlier rather than later in the process, which could delay remediation and the real estate development component of the project.

MARKET FAILURE: JUSTIFICATION OF SUBSIDY

The role of local government and economic development coordinators is critical to brownfield redevelopment in market failure situations. Local entities stand to gain a great deal from the redevelopment of sites, including such economic and social benefits as new jobs, elimination of blight, diversification of the employment base, and creation of new housing opportunities. Fiscal benefits may also include increased property tax, sales tax, and income tax revenues. The revenue stream accruing to the local government entity over time should justify a certain amount of subsidy, either paid up front to reduce clean up costs, or in the form of a low interest loan, tax abatement, or other inducements. Analysis of thirteen successful brownfield projects in the US, Great

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Britain, and New Zealand indicates that the present value of the public subsidy averaged about 20 percent of total project costs: four projects had no subsidy and one had nearly 50 percent (Simons 1998, chapter 7). The subsidies were considerably in excess of remediation costs for the same projects, which averaged about 10 percent of total project cost.

Because private developers will seek to maximize profits, public agencies should be judicious about the use of public funds. The appropriate decision rule would be to subsidize a market-worthy brownfield project up to the point where the developer can make normal industry profits. The subsidy should also have a reasonable fiscal return to the subsidizing agency. For example, a benefit/cost analysis should approximate 1:1 for a subsidy "investment" to reflect the agency's appropriate opportunity cost. See SECTION E titled "Analysis of Public Subsidy," for an example.

THE REAL ESTATE DECISION-MAKING APPROACH

Brownfield redevelopment can be characterized as a real estate development project that is likely to have limited demand, large site preparation costs, and potentially substantial uncertainty in obtaining financing. The clean up associated with site preparation is almost certain to involve a state regulatory agency. Like any real estate development project, brownfield redevelopment involves strategic timing and probably financial leverage to be feasible. Because of the increased costs and public urgency associated with doing nothing, public subsidies and market failure are present, justifying some form of government intervention. However, before the issues of site cleanup and subsidy can be addressed, there are more fundamental questions, such as: should the site be redeveloped at all? What is the best use for the site? Is there market demand for it? If there is sufficient demand, what rate of return is required to justify going forward with the deal, and can the project be financed?

The first set of decisions about the site's potential requires the application of two important real estate techniques: the highest and best use analysis and the market analysis. The highest and best use analysis considers the site's attributes (e.g., size, location, access, visibility, zoning, market base, etc.) and compares them with ideal criteria for a variety of alternative real estate uses to determine which ones would be most suitable. SECTION B, titled "Highest and Best Use," presents this methodology in detail.

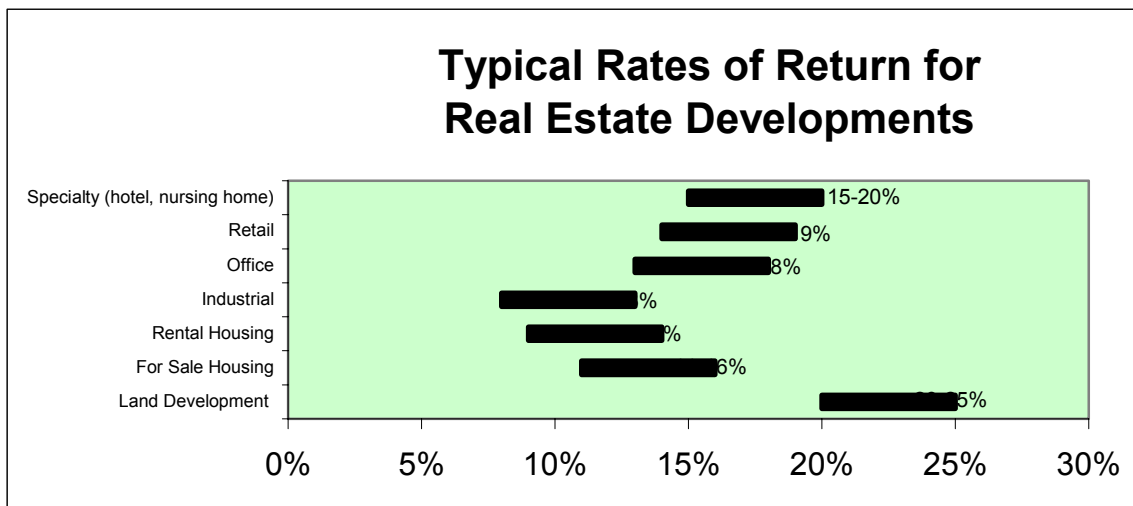
Once the best use for the site has been identified, the next step is to determine, given current competitive conditions, if there is sufficient market demand for the best use to warrant developing the site and investing money and energy into the project. SECTION B, titled "Market Study," demonstrates this technique.

TYPICAL DEVELOPER RETURNS

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Normal industry profits for real estate investments vary by project type, local market conditions (vacancy rates), competition, point in the national expansion/recession cycle, inflation expectations, environmental risks, and uniqueness of the project. Table 4 shows some examples of typical rates of return for different types of real estate. The amount of borrowing (leverage of private funds) also increases both the risk and return to a developer. Return is best measured using discounted cash flow analysis based on projected future net income from the project. If the present value of this cash flow stream exceeds the required investment, then the developer's hurdle rate of return (also called the discount rate or required rate of return) is met and the investment is worthy. SECTION B, titled "Present Value/Discounted Cash Flow," demonstrates this technique.

Table 4.



Because nearly all real estate deals require financing, the following rule of thumb rates of return would apply to privately developed, small to medium (not prime) grade leveraged projects, in a market with typical competitive conditions, after debt service, and before income tax calculations. These rates reflect the market climate in early 1998. Not-for-profit developers would generally require rates of return about three-six percentage points lower. These rates assume there are no lasting environmental problems with the site. Of course, some developers can get a higher rate of return, but most would be satisfied with those shown here. Furthermore, there may be developers who have settled for lower rates after all the costs have been calculated, but would probably not have proceeded with the deal unless they felt they could achieve at least the rates shown below.

LENDER FINANCING AND RISK

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Given that borrowers are generally optimistic and leveraged projects have higher rates of return, the borrower would prefer to borrow 100 percent of the project's cost. For the most part, borrowers/developers are the "engine" for a real estate project; they drive it, and they believe it will succeed. Private lenders, on the other hand, are more conservative and want to leave a cushion in case the property becomes troubled. This cushion is reflected in the loan-to-value-ratio (the original allocation of debt and equity in the deal when the loan is closed), as well as in the projected debt service coverage ratio for ongoing servicing of the repayment of the loan. In general, private lenders will only finance a project after remediation has been completed because banks want to avoid owning an empty building if an owner defaults. In addition, because unremediated or partially cleaned brownfields generally reduce the value of the real estate, banks have been reluctant to lend on brownfields. Even with new state clean up programs that feature lender liability exemptions under most conditions, lenders are still uncertain about the effects of remaining contamination on property value and, therefore, the value of their collateral. Banks would often like to see indemnification against future contamination from the seller or polluter, loan guarantees from a deep pocket entity, and/or environmental insurance. These issues are explored more thoroughly in SECTION D, titled "Remediation Funding."

Public purpose lenders are also available to assist brownfield developers in financing site remediation. Often the rationale is through water pollution control funds (in Ohio, for example) that offer low-interest loans to projects with potential groundwater contamination problems. Other states offer grants or loans for site investigation and /or remediation. SECTION C, titled "Environmental Insurance and Indemnification," provides some details about this issue.

PUTTING IT ALL TOGETHER

Brownfield deals are complicated to finance. On the debt side, there will most likely be a first mortgage for the real estate improvements, a second mortgage for site remediation, and possibly other loan subsidy programs. On the equity side, there will be the developer's equity plus, possibly, other syndicated equity, offset by any up-front grant programs. Because many subsidy programs require the developer to show that the deal "would not go forward except for this program," a carefully crafted, multi-source financial package should be prepared. Another key issue is the subordination of the mortgages within the deal.

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SECTION B: REAL ESTATE TOOLS

HIGHEST AND BEST USE ANALYSIS

The highest and best use of a property is that which will result in the greatest current value of the property. It is critical to realize that the current use of the property may not be the use that will maximize the value of the property. Consider, for example, a large, old residence on the corner of a busy intersection in a shopping district. Although the house may be quite valuable, the property could have a higher value if it were demolished and the land sold as part of a commercial development.

In determining the use of a property in the long, medium, and short term, all plausible and proper uses should be considered with current and future market conditions in mind. More precisely, it should be determined what characteristics a particular property has to offer and how important those characteristics are to a particular use. What follows in Tables 5 and 6 are examples and definitions of site characteristics and potential land uses respectively. Tables 7 through 10 and their supporting narrative provide examples of how highest and best use analysis can be applied in two examples.

Table 5. Site Characteristics Defined

Visibility: Can the site be seen from the roadway with an unobstructed view?

Traffic Volume: What is the average daily traffic in front of the site?

Parking: Is parking close by and in sufficient supply?

Access: Can the site be reached easily from the road? Are there curb cuts, traffic lights, medians, or one way-streets?

Highway Access: Is there a highway on ramp within two minutes or half a mile?

Rail Access: Is there access to railroad on site or nearby?

Airport Access: Is there an airport within ten minutes or five miles?

Residential Base (pop./income): What is the number of households and household income in the project's primary market area?

Workers.(daytime): Is the area a business or industrial district? How many daytime workers are present?

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Primary Demand Generator: Is there a large anchor such as a mall/shopping center, school, factory, or other employment center within a quarter mile?

Supports Other Business: Does the intended use support nearby businesses (e.g., copy services in an industrial subdivision)?

Zoning: Are there limitations as to what use a parcel may be put and how it may be arranged? Is the proposed use permitted, or are variances required?

Infrastructure: Has the site been prepared for utility improvements (sewer, water, electrical, gas, telephone, cable, etc.), or can preparations be easily made?

Incompatible Land Use: Are the contiguous land uses incompatible with the proposed use (e.g., residential next to a noisy all-night factory)?

Size of Site: How large is the site? Is it large enough for the proposed use?

Future Expansion: Is there space available for expansion?

Site Attributes: What does the site have to offer? Is it flat enough, does it allow for connections to contiguous property, both for utilities, buffers, and market?

Strategic Niche Filling: Does the site allow for specific use?

Competition: Are there the same or similar businesses in the competitive market area?

Value of Built Space: How much would the site be worth if fully built out?

Timeframe: How long would it take to develop the sit for the intended use (e.g., parking lot, short-term tenant: two years; office building, long-term tenant: five years)?

Financial Window: Is there financing available for a particular project before interest rates rise or fall?

Market Window: How much demand is there for a particular use, with respect to possible major competition?

Value of Land: How much revenue would the property provide if leased to an outside party?

Excessive Brownfield Problems: Can the project obtain a closure letter from the state VCP? Is there off-site groundwater contamination? Are clean up costs per square foot well above market value per square foot? Can any contamination be capped under a parking lot?

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Table 6. Potential Land Uses and the Importance of Attributes

Fast Food Restaurant: A fast food restaurant would be looking for high visibility, high traffic volume, adequate parking, easy access, and the presence of either a primary demand generator, a heavy daytime workforce, or a dense middle-income residential base. The parcel would not need to be of substantial size and future expansion would not be important. A minimum of direct competition would be desired, but the site could be in a restaurant cluster.

Restaurant with Liquor: A restaurant with liquor would be looking for high visibility, high traffic volume, adequate parking, easy access, and the presence of either a primary demand generator or a dense middle-to upper-income residential base. The parcel would not need to be of substantial size and future expansion would not be important. Would a minimum of competition be desired?

Convenience Store: A convenience store would be looking for high visibility, high traffic volume, adequate parking, easy access, and the presence of either a heavy daytime workforce or a dense residential base. The parcel would not need to be of substantial size and future expansion would not be important. A minimum of competition near larger stores, such as an anchor tenant, would be desired.

Grocery Store: A grocery store would be looking for high visibility, high traffic volume, moderate to substantial parking space, easy access, and a dense residential base. It would hope to be the primary demand generator. The parcel would need to be of substantial size to accommodate both parking and possible future expansion; a lack of other supermarket competition would be desired.

Small Strip Retail: Small strip retail would be looking for high visibility, high traffic volume, a moderate amount of parking, easy access, and the presence of either a primary demand generator or a dense residential base. The parcel may not need to be of substantial size (several acres) and future expansion may not be important. A location near other retail would be desired.

Comparative Retail: Comparative retail would be looking for high visibility, high traffic volume, moderate to substantial parking space, easy access, and the presence of either a primary demand generator or a dense middle-to lower-income residential base. The parcel would need to be of substantial size in order to accommodate both parking and future expansion. A very minimum of similar competition would be desired.

Daycare Center: A daycare center would need a quiet area, with adequate parking, easy access, and the presence of either a primary demand generator, a substantial daytime workforce, or a dense middle-to-upper income residential base. The parcel would not need to be of substantial size and future expansion may not be important. A minimum of competition is desirable.

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Party Center: A party center would not need high visibility or high traffic volume, a moderate amount of parking and easy access would be a plus, and the presence of either a primary demand generator or a heavy daytime workforce would not be necessary. A dense middle- to upper-income residential base would be helpful, and the parcel would need to be large enough to accommodate possible future expansion. A minimum of competition is desirable. This use is basically interested in finding cheap space.

Exhibition Support Services: An exhibition support center would not need high visibility or high traffic volume. A moderate amount of parking and easy access would be a plus, although the presence of either a primary demand generator or a heavy daytime workforce would not be necessary. The parcel would need to be large enough to accommodate possible future expansion. A minimum of competition is desirable.

Conference Center: A conference center would not need high visibility or high traffic volume. A moderate to large amount of parking may be necessary and easy access would be a plus. The presence of either a primary demand generator or a heavy daytime workforce would not be necessary, and the residential base would not be a substantial factor. The parcel would need to be large enough to accommodate possible future expansion, and a minimum of competition is desirable.

Long Term Parking: Long term parking would not need high visibility or high traffic volume. A large amount of parking space would be necessary, and easy access would be a plus. The presence of a primary demand generator such as an airport or railroad station would be necessary, however, a residential base would not be a substantial factor. The parcel would need to be large enough to accommodate possible future expansion. A minimum of competition is desirable.

Car Rental: A car rental center would not need high visibility or high traffic volume. A moderate to large amount of parking would be necessary for the inventory of vehicles, and easy access would be a plus. The presence of a primary demand generator such as an airport or train station would be helpful, but the residential base would not be a substantial factor. The parcel would need to be large enough to accommodate possible future expansion. A minimum of competition is desirable.

Self Mini-Storage: A self mini-storage center would not need high traffic, although the additional visibility that accompanies a high traffic volume would be a plus. Parking would not need to be substantial, but easy access would be a plus. The presence of either a primary demand generator or a heavy daytime workforce would not be necessary, although a dense middle-to upper-income residential base would be helpful. The parcel would need to be large enough to accommodate possible future expansion. A minimum of competition is desirable.

Office Space: An office could benefit from high visibility and traffic volume. A moderate amount of parking and easy access would be a plus. The presence of either a primary

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demand generator or a heavy daytime workforce would not be necessary, but would increase the convenience of the office. A dense middle-to upper-income residential base would be helpful, and access to restaurants at lunchtime would be a plus. The parcel would need to be large enough to accommodate possible future expansion.

Hotel: A hotel would need high visibility and traffic volume; a moderate amount of parking sufficient to serve the guests and easy access would both be necessary. The presence of either a primary demand generator such as an airport, train station, or highway would be beneficial, although the residential base would not be a major factor. The parcel would need to be large enough to accommodate possible future expansion. A minimum of competition is desirable.

Industry: An industrial site would not need high visibility or traffic volume. A moderate amount of parking would be necessary to accommodate employees, and easy access to and from a highway would be necessary. Access to a rail link would be desirable. The presence of a skilled workforce would be necessary, and the parcel would need to be large enough to accommodate possible future expansion. Basically requires cheap land near truck route or highway interchange.

Light Assembly/ Industrial: A light assembly site would not need high visibility or traffic volume, although a moderate amount of parking would be necessary to accommodate employees. Easy access to and from a highway would be necessary, and access to a rail link would be desirable. The presence of a skilled workforce would be necessary, and the parcel would need to be large enough to accommodate possible future expansion. Basically requires cheap land near truck route or highway interchange.

Research Park: A research park would not need high visibility or traffic volume, but a moderate amount of parking would be necessary to accommodate employees. Easy access would be a plus, and while a primary demand generator would not be necessary, the presence of a skilled workforce would be. The parcel would need to be large enough in order to accommodate possible future expansion.

Food Supplier: A food supplier would not need high visibility or traffic volume, but a moderate amount of parking would be necessary to accommodate employees. Easy access to and from a highway would be necessary, and, depending on size, access to a rail link might be desirable. The residential makeup would not be a substantial factor, but the parcel would need to be large enough to accommodate possible future expansion.

Residential: Requires a quiet area with good demographics. Small sites, not near industrial uses, are acceptable. Poor access and visibility, and low traffic counts are desirable. Proximity to shopping, parks, and schools are a plus.

Highest and Best Use Analysis Example 1: Brookpark Rapid Station

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This example is from a publicly owned parcel of about 15 acres in Cleveland, Ohio. No brownfield problems have been documented, but reviewed contamination is possible.

The purpose of this analysis was to determine which uses would be the most suitable for the subject property (Brookpark Light-rail Rapid Station) in the long, medium and short term, subject to market conditions. The sites were surveyed according to a variety of characteristics and an assortment of broad potential commercial and industrial land uses were considered. Twenty-five characteristics (such as access and visibility, etc.) were ranked on a 5-point scale with -2 being the least favorable assigned value and +2 the most favorable assigned value. The characteristic values for the land uses were added to achieve a cumulative score, then the possible uses were ranked in order for the short, medium, and long term. A summary of the highest and best use is presented in Table 7, while a detailed analysis is presented in Table 8. Refer to Map A1 for an aerial view of the site.

Table 7. Summary of Highest and Best Use: Brookpark Rapid Station Site

Long Term Use	Matrix Total
Back Office	30
Speculative Office	26
Hotel	25
Medium Term Use	Matrix Total
Small Conference Center	21
Restaurant	18
Fast Food	17
Short Term Use	Matrix Total
Long Term Parking	22
Car Rental	21

Back offices, which ranked highest of the long term uses (30 points), typically house operations such as application processing, customer service, data processing, and check processing. Back offices typically provide a high density of clerical office workers. Speculative office and hotel ranked second and third in long term use with a total of twenty-six (26) and twenty-five (25) points, respectively.

For the medium run, use as a small conference center that could cater to business needs outranked a restaurant and a fast food restaurant, with respective point totals of twenty-one (21), eighteen (18), and seventeen (17).

Long-term parking serving airport travelers and a “park and ride” service received a total of twenty-two (22) points as a short-term use. Car rental, which would also serve airport

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travelers, received twenty-one (21) points as a short-term use. Both uses would be compatible with brownfield redevelopment because they would cap any possible contamination on site. Although the other uses may not have ranked as highly as the best uses, they should not entirely be discounted as potential development options.

Large retail uses may not be suitable for the site due to the lack of proximity to a major intersection, the limited size of the development site, and competing sites which may be more conveniently accessible. Also, retail structures are usually one story, therefore the building value would be relatively small. The need for expansion may deter industry, light industry, and research parks due to the lack of available contiguous land and the physical barriers of highways, roads, and railroads.

Map A1: Site Layout: Brookpark Rapid Station

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Table 8. Highest and Best Use Matrix: Brookpark Rapid Station

		USE																					
CATEGORY		Fast Food Restaurant	Restaurant w/Liquor	Convenience	Grocery Store	Small Strip Retail	Comparative Retail	Day Care	Party Center	Exhibition Support Services	Conference Center	Long-Term Parking	Car Rental	Self Mini-Storage	Speculative Office	Back Office	Hotel	Hotel/Restaurant	Industr	Light Assembly Industr	Incubator	Research Park	Food Supplier
	Visibility	1	1	1	-1	1	-1	-1	-1	1	2	2	2	1	2	2	2	1	-1	1	0	0	1
	Traffic Volume	1	1	1	0	0	-1	-2	-1	0	1	0	0	1	1	1	2	1	0	0	0	0	0
	Parking	2	1	0	0	1	0	0	1	2	1	2	1	0	2	2	2	1	1	1	1	1	1
	Access	2	1	1	-1	-1	2	0	0	0	1	2	1	1	1	1	1	1	1	1	1	1	2
	Highway Access	0	0	0	1	1	1	-2	1	1	1	1	1	1	1	1	1	1	2	2	2	1	0
	Rail Access	0	0	0	0	0	0	-2	0	0	0	0	0	0	2	2	1	1	2	2	2	2	2
	Airport Access	0	0	0	0	0	0	0	0	1	2	2	2	0	1	1	2	1	1	1	1	2	2
	Residential Base (pop. income)	-2	-1	-1	-1	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Workers (daytime)	1	1	1	-1	1	0	1	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0
	Primary Demand Generator	1	1	2	-1	1	0	1	0	2	1	2	1	0	1	1	2	1	0	1	0	1	2
	Support Other Business	1	0	1	1	1	1	2	1	1	1	1	1	0	1	1	1	1	0	0	0	1	1
	Zoning	2	2	2	2	2	2	0	2	2	2	2	2	2	2	2	0	0	2	2	2	2	2
	Infrastructure	1	0	0	0	0	0	-1	0	1	1	2	2	0	1	1	1	1	2	2	1	1	1
	Incompatible Land Use	1	1	1	0	0	-1	-2	0	0	0	1	1	1	2	2	2	1	-1	0	0	0	0
	Size of Site	2	2	2	-1	1	-2	0	1	1	1	1	2	2	2	2	2	2	0	0	0	-2	0
	Future Expansion (space)	2	2	2	-2	1	-2	0	1	0	0	0	1	1	1	1	1	1	-1	-1	-1	-2	-1
	Site Attributes (layout)	0	0	0	0	0	0	-1	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	Strategic Niche Filling	1	0	1	0	0	1	1	1	2	2	0	0	1	1	1	2	1	0	0	1	2	2
	Competition	1	1	1	2	2	2	1	2	1	2	0	0	1	1	2	1	0	0	0	1	2	1
	Value of Built Space	-1	0	0	2	1	2	0	1	1	1	-2	-1	0	2	2	2	1	1	1	1	2	1
	Timeframe (short, medium, long)	medium	medium	medium	long	Long	long	medium	Medium	medium	medium	short	short	medium	long	long	long	long	long	long	medium	long	long
	Financial Window	0	0	0	-1	-1	-1	0	0	-1	-1	1	1	1	-1	1	-2	-2	1	1	-1	-1	0
	Market Window	1	1	1	0	0	0	1	1	1	1	0	0	1	-1	0	-2	-1	1	1	0	1	0
	Brownfields	0	0	0	0	0	0	-2	0	0	0	2	2	0	0	0	0	0	1	1	0	0	0
	Value of Land (lease)	0	0	0	2	1	2	0	0	1	1	1	1	1	2	2	2	2	1	1	1	1	1
	Meet RTA Objectives (riders)	0	0	0	1	0	1	0	0	1	1	2	1	0	2	2	2	1	0	0	0	0	0
TOTALS		17	14	16	2	12	6	-7	10	16	21	22	21	15	26	30	25	17	12	17	13	15	18

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Map A2: Site Layout: Triskett Rapid Station

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Highest and Best Use Analysis Example 2: Triskett Rapid Station

Again, the purpose of this analysis was to determine which uses would be the most suitable for the subject property in the long, medium, and short term, subject to market conditions. As before, characteristic values for the land uses were added to achieve a cumulative score, then the possible uses were ranked in order for the short, medium, and long term. A summary of the highest and best use is presented in Table 9, while a detailed analysis is presented in Table 10. Refer to Map A2 for an aerial view of the site. The Triskett site had a confirmed LUST release at the bus service garage on another part of the site, not under development. Otherwise, brownfields were not a perceived or actual problem at this location.

Table 9. Summary of Highest and Best Use: Triskett Rapid Station

Use	Matrix Total
Day Care Center	25
Back Office	25
Speculative Office	21
Restaurant	18
Restaurant w/Liquor	18
Convenience Store	18

Discussed in the Brookpark example, back offices, which ranked highest of the long term uses (25 points), typically house operations such as application processing, customer service, data processing, and check processing. In addition, back offices usually provide a high density of clerical office workers. Speculative office use for the site ranked third with a total of twenty-one (21) points generated.

Other uses include a restaurant, a convenience store, and day care center, which scored substantially higher than the other (day care twenty-five (25) points, restaurant and convenience store eighteen (18) points each). Additionally, retail uses were not favored due to the low level of activity in the surrounding area, the lack of frontage along a minor roadway, the steep grade along Triskett Avenue (a major roadway), and the linear layout of the site.

Table 10. Highest and Best Use Matrix: Triskett Rapid Station

		USE													
		Fast Food Restaurant	Restaurant	Restaurant w/Liquor	Convenience Store	Grocery Store	Small Strip Retail	Comparative Retail	Day Care	Party Center	Speculative Office	Back Office	Industry	Light Assembly Industry	Incubator
CATEGORY															
	Visibility	2	2	2	2	2	0	0	1	1	1	2	0	0	0
	Traffic Volume	1	1	1	1	1	1	1	0	0	0	0	0	0	0
	Parking	1	2	2	2	2	2	2	2	2	2	2	2	2	2
	Access	2	2	2	2	2	2	2	1	1	1	1	2	2	2
	Highway Access	0	1	1	0	0	1	2	1	1	2	2	2	2	2
	Rail Access	-2	-2	-2	0	1	0	-1	1	-1	1	2	1	1	1
	Airport Access	-2	-2	-2	-2	-1	-2	-2	-2	-2	-1	-1	0	0	0
	Residential Base (pop. income)	2	2	2	2	2	2	0	2	0	0	0	0	0	0
	Workers (daytime)	1	1	1	1	1	1	1	2	0	1	1	-1	0	0
	Primary Demand Generator	0	1	1	1	1	1	0	2	1	2	1	0	1	1
	Support Other Business	0	0	0	0	-1	0	0	1	0	1	0	2	2	2
	Zoning	2	2	2	2	2	2	2	0	2	2	2	2	2	2
	Infrastructure	2	2	2	2	2	2	2	2	2	2	2	2	2	2
	Incompatible Land Use	2	2	2	2	2	2	2	2	2	2	2	-1	0	1
	Size of Site	2	2	2	2	2	2	1	2	2	2	2	2	2	2
	Future Expansion (space)	0	2	2	2	0	0	0	1	0	-1	-1	-2	-1	-1
	Site Attributes (layout)	2	1	1	1	0	0	0	2	1	1	1	1	1	1
	Strategic Niche Filling	0	1	0	0	0	0	0	2	0	0	1	0	0	1
	Competition	0	0	-1	-1	-1	-1	-1	1	0	-1	0	0	0	0
	Value of Built Space	0	1	0	0	1	1	1	1	1	2	2	2	2	2
	Financial Window	1	0	1	1	1	1	0	1	0	-2	0	0	0	0
	Market Window	1	2	2	2	1	2	1	2	0	-2	0	0	0	0
	Brwonfields	0	0	0	0	0	0	0	-1	0	0	0	1	1	0
	Value of Land (lease)	-2	-2	-2	-2	-1	-1	-1	-2	-1	2	2	2	1	1
	Meet RTA Objectives (riders)	-2	-2	-1	-1	-1	-1	-1	1	-2	2	2	-1	0	0
TOTALS		13	19	18	19	18	17	11	25	10	19	25	16	20	21

MARKET STUDY

Introduction

A real estate market study is the analysis of the factors that determine the demand for and supply of various types of real estate. A market study is interested in the underlying factors that influence investment profitability, such as population, households, employment, and income, and the attitudes, tastes, and preferences of the user of real estate. A market study also examines various events in the marketplace, such as sales, rentals, vacancy rates, and future supply.

Real estate market studies have a geographic frame of reference. The aim of a market study is to estimate the demand for and supply of a particular property type in a selected area. This area, although usually community-based, can be on a regional or national scale. A typical market study has a primary market area from which it draws the bulk of its sales.

Disaggregation and segmentation are the basic techniques used in a market study. Disaggregation distinguishes the subject property from other properties by sub-classification, whereby properties are separated into smaller groups according to differing product characteristics. Segmentation distinguishes between potential users of the subject apart from the general population, according to different customer characteristics. For example, low-income housing units in the central city may be identified as a subset of particular focus in the market study, with the demand for this type of housing determined by economic and demographic characteristics.

A market study may take other forms as well, such as marketability and feasibility analyses. A marketability study focuses on a particular property in an attempt to maximize the property's competitive position in the market. It may stand alone as a separate study intended to answer a specific question, or it may be an integral part of a market demand study. Next, the feasibility analysis involves finding out whether a specific project can be financially successful. Determining success may be as simple as determining whether sufficient profit will be generated, however, this is not always the case. A nonprofit organization, for example, would not be primarily motivated by profitability. Thus, the feasibility question is whether the project can satisfy the client's investment objectives. This analysis determines whether the project can produce a reasonable rate of return given its level of risk. The market study example below addresses only the demand side of the issue.

Methodology

As mentioned above, the purpose of a market study is to estimate the demand for and supply of a particular property type in a select, usually community-based, area. Once the study area is defined, supply, demand, and net supportable square footage is determined for each market segment in the study area. What follows is a series of

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steps and calculations that should be performed in order to determine the net supportable square footage for a study area. This methodology should be followed for each market segment, i.e., residential, retail, and office space. The example that follows below pertains to a convenience retail shopping center.

Overview Of Methodology

1. Determine the primary market area (PMA).
2. Determine the number of present and future households or persons in the PMA.
3. Determine the total personal income available in the PMA.
4. Determine the consumer expenditure patterns for all types of goods and services.
5. Determine the project's capture rate by type of good or service.
6. Determine the potential sales by type of good or service.
7. Determine the square footage of existing and vacant competitive space.
8. Determine the sales per square foot by type of good or service.
9. Determine the supportable square footage by type of good or service.
10. Determine the net supportable square footage of the project. These steps are summarized on Table 11.
11. Perform a tenant mix/niche analysis.
12. Determine the lease rates.
13. Determine the estimated rental or sales rates using multiple regression analysis.
14. Estimate the absorption of the new space.
15. Based upon the information derived from the above steps, determine whether or not to go forward with the project, also known as the go/no go decision

Demand Side Factors

Step One - Determine the study area. The study area can be defined in a number of ways. The single most important factor is that the boundaries be defined. The study area could be as small as a single census tract, or could be on a national/regional scale. Typically a PMA could be determined by evaluating the access, visibility, draw

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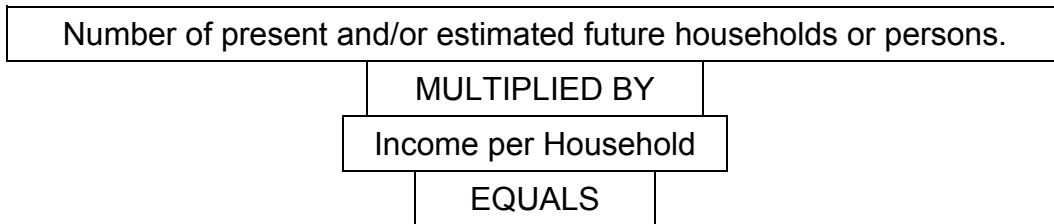
congestion, and any physical barriers which could limit the market area. A gravity model may be the best way to determine a retail PMA.

Step Two - Determine the number of present and future households or persons in the study area. This information can be obtained through census data provided by the federal government, or private data vendors.

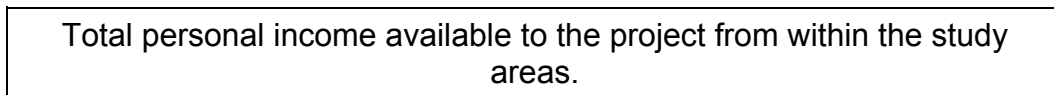
Step Three - Determine the total personal income available to the project. Income available to the project can be derived by multiplying the mean household income by the number of households, or by multiplying the per capita income by the population. Again, this information can be derived from census sources.

Example I:

Step two:



Step three:



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Table 11. Market Niche Analysis: Methodology Example

A PMA Income	B Expenditure Type	C Percent Income per Expenditure Category	D Market Penetration Rate	E Potential Sales	F Average Sales Per Square Foot	G Gross Support Square Footage	H Existing Square Footage	I Net Support Square Footage
\$202,704,629	Supermarket	8.5	70	\$12,060,925	\$250	48,244	36,000	12,244
\$202,704,629	Drug Store	1.4	70	\$1,986,505	\$175	11,351	5,600	5,751
\$202,704,629	Convenience	.5	70	\$709,466	\$302	2,349	10,500	(8,151)
\$202,704,629	Restaurant without liquor	1.1	70	\$1,560,826	\$152	10,269	2,300	7,969
\$202,704,629	Bar with food	.3	70	\$425,680	\$128	3,326	13,000	(9,674)
\$202,704,629	Fast food	1.51	70	\$2,142,588	\$173	12,385	12,000	385
\$202,704,629	Liquor stores	.3	70	\$425,680	\$155	2,746	0	2,746
\$202,704,629	Women's clothing	.06	70	\$85,136	\$135	631	0	631
\$202,704,629	Men's clothing	.1	70	\$141,893	\$153	927	0	927
\$202,704,629	Family shoes	.3	70	\$425,680	\$103	4,133	0	4,133
\$202,704,629	Hardware	.3	70	\$425,680	\$84	5,068	6,500	(1,432)
\$202,704,629	Book stores	.1	70	\$141,893	\$136	1,043	0	1,043
\$202,704,629	Dry cleaners	.3	70	\$425,680	\$99	4,300	4,300	0
\$202,704,629	Thrift Shop	.06	70	\$85,136	\$48	1,774	0	1,774
\$202,704,629	Banks	.4	70	\$567,573	\$163	3,482	0	3,482
\$202,704,629	Radio/Electronics	.4	70	\$567,573	\$131	4,333	0	4,333

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Step Four - Determine the consumer expenditure patterns for all types of goods and services. Households at various income levels maintain different expenditure patterns, i.e. they spend varying percentages of their income on different goods and services. This percentage represents an expenditure pattern. These differences may be substantial or inconsequential. For example, lower-income households spend a substantially higher percentage of their income on food and housing than do those with higher incomes. By way of another example, higher-income households spend much more on clothing than do lower-income households. The potential demand for a good or service is derived by dividing income by expenditure patterns for each type of good or service.

Step Five - Determine the project's capture rate by type of good or service. A project's ability to attract consumers is affected by competition, access, visibility, and size. Basically, how abundant are comparable residential, retail, or office space providers? Is the real estate easily accessible, e.g., is it located near a highway? Can it be seen from the road? Is it a regional shopping center or a neighborhood strip mall? Is it a major office complex or a store front office?

When considering the capture rate for a particular type of real estate, estimate separately for both primary and secondary market areas. That is, one should consider not only the percentage of capture within the study area, i.e., the primary market, but also the secondary market area, i.e., the area that either borders or surrounds the primary area. This analysis should be based on market linkages. Market linkages are based on the relationships that exist between different land users who are separated geographically. For example, there is a link between an industrial land user and residential land user, in that the industrial land user provides employment and the residential area provides labor to the employer.

There are three primary considerations when examining linkages. These are cost of friction, amenity, and convenience. The cost of friction has to do with the actual money cost associated with travel between market areas. These costs can include vehicle purchase, fuel cost, insurance, maintenance, licenses and fees, parking, and public transportation. Also to be considered is the value of time spent traveling to a market area. Second, the amenities offered by a site will attract various users. Some amenities are location specific, for example, there is only one Grand Canyon. However, architecturally-based amenities can be located almost anywhere. Finally, convenience is usually associated with the ease of access. If site use becomes inconvenient, consumers will go elsewhere.

When making a capture rate determination, a conservative analysis would focus on the primary market area. The study area, i.e., primary market area, should have a very high capture rate for convenience goods. The rate should be 60 percent or more for convenience class of goods and services, thus establishing a spatial monopoly. A more aggressive analysis may include the secondary market area. The study area should have a much lower capture rate than the secondary area, ideally anywhere between 10-25 percent.

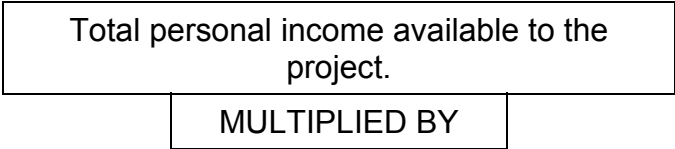
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The capture rate of a project is usually the least well-documented assumption in a market study and the most difficult to quantify due to the lack of data. What is needed is primary data of consumer behavior. For example, an address plot of shoppers can be very revealing.

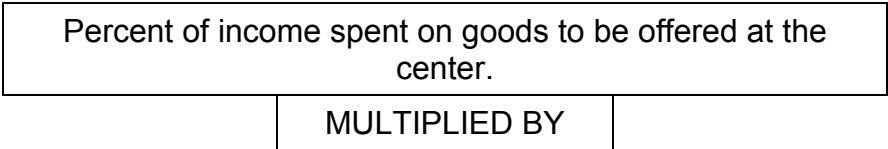
Step Six - Determine the potential sales by type of good or service by multiplying total personal income by percent of income.

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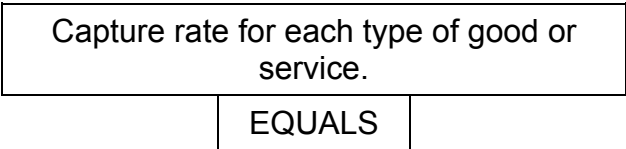
Step three:



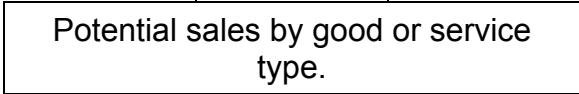
Step four:



Step five:

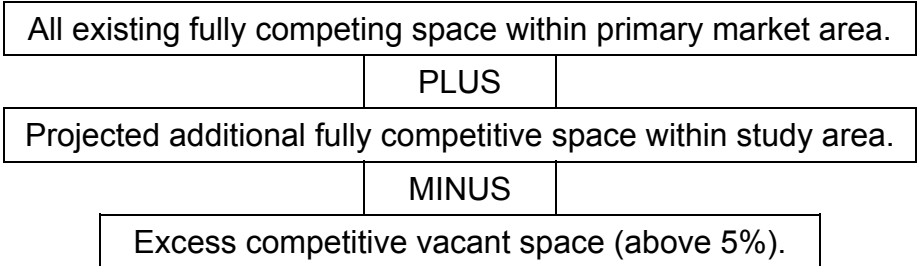


Step six:

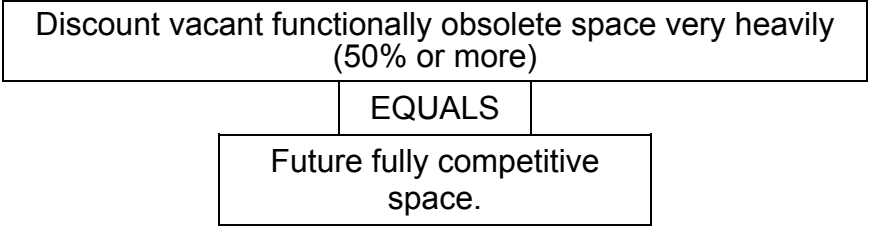


Step Seven - Determine the square footage of existing and vacant competitive space. For example, if your project were a drug store you would first determine the number of square feet in the study area that are presently devoted to drug stores. You would then add the number of square feet you plan to add to the study area, or that you anticipate will be added by yourself and others. This process can be followed for any type of project, and can be as detailed or as general as your needs dictate.

Calculated by:



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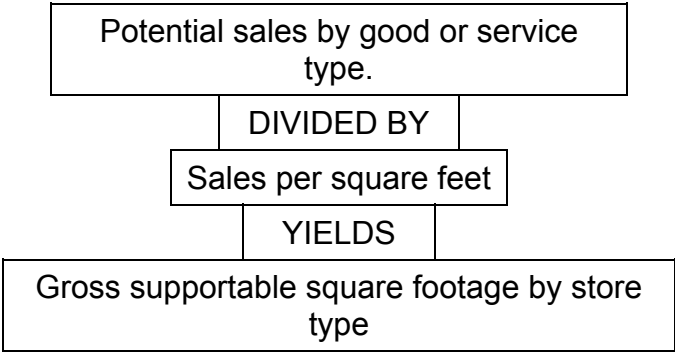


Functionally obsolete space may not be considered fully competitive. It should be included in the analysis, but discounted. Functionally obsolete space normally has a substantially lower level of sales than truly competitive space. The discounting factor could approximate the ratio of sales between the functionally obsolete space and fully competitive space.

Step Eight - Determine the sales per square foot by type of good or service. After determining the potential sales for each good or service type in the study area in step six, and the number of fully competitive square feet devoted to each type of good or service in your study area in step seven, you can then calculate the potential sales per square foot for each good or service type. This figure is determined by dividing the potential sales for each type of good or service by the anticipated number of square feet to be devoted to each type of store.

Calculated by:

Step six:



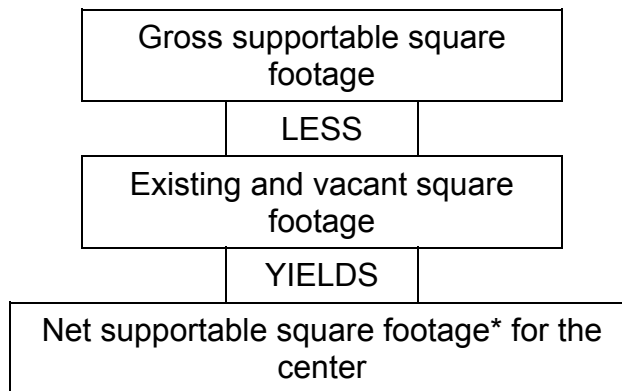
Step Nine - Determine the supportable square footage by type of good or service. Once you have determined the potential sales for each type of good or service, divide that number by an estimate of the total number of square feet devoted to each type of good or service in your study area. You will then have an estimate of sales per square foot. To continue the above example, in order to get a clearer understanding of how your potential sales per square foot stacks up against other drug stores you could consult data from Urban Land Institute's *Dollars & Cents of Shopping Centers*. Find a store type of similar center size and located in the same geographic area. This will give you an idea of how your project would perform compared to other typical centers. An alternative data source could be local sales tax receipts, *Census of Retail Trade* or

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Census of Service Industries from the U.S. Department of Commerce, or an inventory of store square footage in the study area. Depending on the type of good or service being examined, sales usually range from \$100 to \$350 per square foot per year.

Step Ten - Determine the net supportable square footage of the project.

Calculated by:



*Note: This square footage is usually expressed in a range and represents the total size of the center in the net leaseable area. This same analysis can be conducted by store type.

Step Eleven - Perform a tenant mix/niche analysis. In order to achieve the correct synergism for the project, an appropriate tenant mix must be obtained. Utilizing the information gathered in steps eight through ten, you will be able to perform a niche analysis to determine which type of tenants the project can support according to net supportable space by store or service type. It is important at this point to realistically determine whether the supportable size for each store is feasible. Here your concern should be that the space is not too small. For instance, if your research determines that the market area can support one hundred more square feet of supermarket space, it would not be advisable to construct such a small supermarket. The attached Table B1 contains a full documentation of this process.

Step Twelve - Determine the lease rates. The market study should include projected average rents for online space and lease terms. The project could have different lease

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rates than other shopping centers, yet rates must be competitive, accounting for location, size, and amenities.

Step Thirteen - Determine the estimated rental or sales rates using multiple regression analysis. A detailed discussion of multiple regression analysis is beyond the scope of this manual. At this point, if you are not in a position to conduct this type of analysis you should either consult a text dealing with this subject matter or consult someone with the necessary skills.

Step Fourteen - Estimate the absorption of the new space. Absorption is defined by how quickly space can be brought online, i.e., leased up. This topic is of utmost importance. Many lenders require that a substantial amount of space (generally 50-70%) be pre-leased before financing is extended. Lenders will certainly require that the anchor tenant be pre-leased prior to construction/financing. The lease-up period may take up to one year or more in a soft market.

Step Fifteen - Based upon the information derived from the above steps, you can determine whether or not to go forward with the project, also known as the “go” or “no go” decision.

PRESENT VALUE/DISCOUNTED CASH FLOW

The present value of an asset is the amount an investor would be willing to pay for that asset. The present value concept is an advanced method of evaluating real estate investments and for examining alternative investment options. The technique is useful because it considers the time value of money, and it provides a present value for any stream of cash flow from a potential investment, regardless of when the cash is received.

Because a dollar received a year from now is worth less than a dollar received today, even if inflation is not a factor, the time value of money is a critical consideration. The dollar in hand is worth more because it can be reinvested and earn interest; a dollar that has not yet been received yet cannot. Therefore, in order to determine the present value a future dollar, it must be discounted to reflect the interest income (opportunity cost) that has been lost.

In real estate, the present value concept is used to determine the current value of a property, taking into account the anticipated future revenues, (such as rents), minus the expenses, (such as utilities, property taxes, insurance, and maintenance). This is known as the Net Operating Income (NOI). The NOI is discounted at a specific rate of return, or discount rate, and the discounted totals for each time period are added to the present value.

The discount rate is a critical assumption and its value depends on the opportunity cost of the investment; that is, what the investor could have earned if the money had been

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put to a different use. The discount rate will also depend on the investor's objectives and constraints. For example, a nonprofit organization will require a lower rate of return than will a private investor, and therefore, require a lower discount rate. It is important to point out that the present value (PV) of a property will rise if the investor is willing to accept a lower rate of return. For example, consider the difference in the value of a dollar to be received one year in the future by various investors, with different discount rates:

Type of Investor	Discount Rate	Future Value
Private Developer	15%	87¢
Nonprofit Organization	8%	93¢
Government Agency	6%	94¢

The formula for present value is:

$$\sum PV \frac{(r_n - e_n)}{(1+d)^n} + \frac{(r-e)^N}{(1+d)^N}$$

Where r=revenues e=expenses d=discount rate N, n=number of time periods

The present value of a dollar to be earned sometime in the future depends not only on the discount rate, but also on the length of time before the dollar is received. Thus, the further in the future that a dollar is to be received, the less the present value of that dollar. For example, if an investor has a discount rate of 12 percent, then the present value of one dollar to be received one year from now is .89¢ ($\$1.00/(1+.12\%) = .8928\%$). That is, the value of a dollar to be received in one year is worth .89¢ today. The present value of that same dollar if it were to be received two years from now, is .80¢ ($\$1.00/(1+.12\%)^2 = .7971\%$). By utilizing a spreadsheet, one can easily compute the present value of a dollar several years into the future. In order to do so, a useful tool to calculate the future value of the revenues is the PV factor. The PV factor is determined for year one using the formula in the above example, $1/(1+ \text{the discount rate})$, that is $1/(1+.12\%)$ is equal to .892857. The PV factor for year two is determined by squaring the PV factor of year one, $1/(1+ \text{the discount rate})^2$, or $1/((1+.12)(1+.12))$, that is .892857 by .892857, equaling .797194. The PV factor for year three is determined by multiplying the PV factor of year two times the PV factor of year one, $1/(1+ \text{the discount rate})^3$, that is .892857 by .797194, equaling .71178.

This process is carried out for as many years in the future as desired. Then the dollar figure of the revenues from a particular year is multiplied by the PV factor for that year resulting in the present value of the dollar if received in that year. All present values are then added, resulting in the approximate value of the property. For example:

Table 12. Present Value Analysis at 12%

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Discount Rate 12%			
Year	1	2	3
Revenues	\$13,000	\$14,000	\$15,000
Expenses	\$3,000	\$4,000	\$3,000
NOI	\$10,000	\$10,000	\$10,000
PV Factor	0.8927	0.7972	0.7118
Present Value	\$8,928	\$7,971	\$7,117
Sum of PV's	\$24,016		

Here we see a simple spreadsheet demonstrating our first example and illustrating the use of the PV factor. We find, by summing the present values of each year, that the property is currently worth approximately \$24,016. By changing the discount rate, the PV factor and the present value change as well. In the example below, we find that by increasing the discount rate, the approximate current value of the property to the investor has decreased to \$23,214.

Table 13. Present Value Analysis at 14%

Discount Rate 14%			
Year	1	2	3
Revenues	\$13,000	\$14,000	\$15,000
Expenses	\$3,000	\$4,000	\$5,000
NOI	\$10,000	\$10,000	\$10,000
PV Factor	0.8772	0.7695	0.6750
Present Value	\$8,772	\$7,695	\$6,749
Sum of PV's	\$23,214		

Capitalization Rate

Equally as important as the discount rate is the capitalization (cap) rate. The capitalization is used to determine at what price a particular income-producing property should sell, given its current NOI in the year of sale. Capitalization is based on the fact that, at a given point during the holding period, the current market value of the property is related to the current NOI of that property. Cap rates are very similar to the price-

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earnings (P/E) ratios calculated for common stocks, in that the cap rate relates the NOI of a property to the value of the property just as P/E ratios relate the current price of a stock to the current earnings of the company. For example, a property with an NOI of \$90,000 that sold at \$900,000 would have a cap rate of 0.1 (i.e., $\$90,000 / \$900,000 = 0.1$). This is identical to saying a particular buyer would require a 10 percent rate of return on her/his investment.

Cap rates are helpful if they are ascertained from reliable information about what investors have been paying for properties comparable to property being valued. The idea behind this is that, if comparable properties are selling at a particular cap rate given their NOI's, then the property being valued should also sell at a similar cap rate given its NOI. One would determine cap rates by looking at local real property appraisals. The cap rate will vary by property type.

To summarize, in order to calculate the present value of an investment property the basic technique requires that the following two figures be added together:

1. The sum of the present values of the NOI, before taxes, for each of the holding period years; and
2. The present value of the selling price at the end of the holding period (determined with the aid of the cap rate), less the selling expenses.

Decision Rule: Net Present Value

The reason one would spend the time and effort to construct a present value/discounted cash flow model is that the information derived from the spreadsheet model can be put to use in the decision-making process. The decision rule is known as the net present value (NPV). The NPV uses the same framework as present value, however, it also considers the initial cost of the investment. Once the present value of the after-tax cash flow on the sale has been determined and the after-tax cash flow of each year the property is expected to be held are added together, the initial cost of the investment is subtracted. If the NPV is positive, the property would be worthy of investment. If the NPV is negative, the property would not be a good investment. The rate of return (IROR) on the investment can be determined by dividing the profit on the deal by the initial investment by the NPV.

Brownfield Investment Example

The examples in Tables 14-16 illustrate this process and the effects of different discount rates and brownfield grant programs for a private investor, a not-for-profit organization,

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and a community development company respectively, on a brownfield property. The property can be acquired for \$22,500 and has property taxes of \$1,600/year. Its cleanup cost is \$150,000, (\$4/land square foot) with a market value, when clean, of \$90,000.

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Brownfield Land Deal: Examples

Table 14. Private Investor

Input Range			
Discount Rate	15.00%		
Price per Sq. Ft.	\$0.50		
Sell per Sq. Ft.	\$2.00		
Remediation Cost Sq. Ft.	\$4.00		
Number of Sq. Ft.	45,000		
Acquisition Price	\$22,500		
Revenues	1	2	3
Sale	0	0	\$90,000
Total Revenues	0	0	\$90,000
Expenses			
Buy	\$22,500		
Property Tax	\$1,600	\$1,600	\$1,600
Remediation Cost		\$180,000	
Total Expenses	\$24,100	\$181,600	\$1,600
NOI	\$(24,100)	\$(181,600)	\$88,400
PV Factor	0.869565	0.756144	0.657516
Present Value	\$(20,956)	\$(137,315)	\$58,124
Total Present Value	\$(100,147)		
Less Initial Investment	\$22,500		
Net Present Value	\$(122,647)		
NPV negative, therefore do not invest.			

* Considered above in year one, acquisition cost may either be omitted in year one and counted here at full (non-discounted) value, or modeled as shown.

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Table 15. Not-For-Profit Organization with Grants

Input Range			
Discount Rate	8.00%		
Price per Sq. Ft.	\$0.50		
Sell per Sq. Ft.	\$2.00		
Remediation Cost Sq. Ft.	\$4.00		
Number of Sq. Ft.	45,000		
Acquisition Price	\$22,500		
Revenues	1	2	3
City Grant		\$120,000	
Sale			\$90,000
Total Revenues		\$120,000	\$90,000
Expenses			
Buy	\$22,500		
Property Tax	\$1,600	\$1,600	\$1,600
Remediation		\$180,000	
Total Expenses	\$24,100	\$181,600	\$1,600
NOI	\$(24,100)	\$(51,600)	\$88,400
PV Factor	0.925926	0.805153	0.700133
Present Value	\$(22,314)	\$(41,545)	\$61,891
Total Net Present Value	\$(1,968)		
NPV negative, therefore do not invest.			

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Table 16. Community Development Company with Grants

Input Range			
Discount Rate	6.00%		
Price per Sq. Ft.	\$0.50		
Sell per Sq. Ft.	\$2.00		
Remediation Cost Sq. Ft.	\$4.00		
Number of Sq. Ft.	45,000		
Acquisition Price	\$22,500		
Revenues	1	2	3
City Grant		\$150,000	
State Grant		\$50,000	
Sale			\$90,000
Total Revenues		\$200,000	\$90,000
Expenses			
Buy	\$22,500		
Property Tax	\$1,600	\$1,600	\$1,600
Remediation		\$180,000	
Total Expenses	\$24,100	\$181,600	\$1,600
NOI	\$(24,100)	\$18,400	\$88,400
PV Factor	0.943396	0.820345	0.713343
Present Value	\$(22,735)	\$15,094	\$63,059
Net Present Value	\$32,918		
 NPV positive, therefore invest. 			
Because NPV is positive, rate of return exceeds discount rate. Also, because NPV is well above 0, it may be inferred that the project received <u>too much</u> government subsidy.			

REAL ESTATE BASICS

Like other businesses, real estate has its own vocabulary. If one expects to effectively propose, negotiate, and close real estate deals, he or she must be capable of using and understanding the profession's terms and lingo. Every brownfield project is really just a more complex than average real estate project, with unusually high site preparation costs and higher risk because public subsidies are often revealed. Thus, those representing the public have to be informed on the basics of real estate terminology. This section provides a list of real estate definitions and concepts. The definitions cover such topics as property rights, forms of property ownership, transactions, ownership vehicles, security interests, revenue sources, and property options.

Property Rights

- Personal Property: equipment, fixtures, and other property.
- Real Property: land, building, and associated rights.
- Bundle of Rights: possession, control, enjoyment, and disposition.
- Surface Rights: right to use the surface of the property, subject to public regulations.
- Air Rights: right to use or develop the air above a parcel or building.
- Subsurface Rights: mineral rights, water rights, etc.
- Mineral Rights: the right to mine and develop mineral resources under a parcel.
- Water Rights: right to use or sell water allocated to a parcel.
 - Riparian: eastern US
 - Appropriative: western US
- Easement: the right to use but not possess real property. The user may conduct certain activities on part of a parcel owner by another party (utility, traffic right-of-way). Recorded publicly.
- Prescriptive Easement: when the right to an easement, usually a right-of-way, is won by use, when done openly over many years; akin to adverse possession.
- Covenant: restrictions on what uses or activities can occur on a property; privately enforced.
- Security Interest: lien position of a mortgage permits legal interest in property, but not one that will generally develop into ownership except in the event of foreclosure.
- Base Rent: negotiated base rent in dollars per square foot per year.
- Percentage Rent: a percentage of gross or net sales paid by tenant to landlord after a negotiated break point.

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- Periodic Increases to Base Rent: often based on consumer price index (CPI), negotiated annual increases to base rent, either preset or based on some percent of CPI.
- Expense Pass-Through: (for net leases only) expenses will be passed from landlord to tenant.
- Common Area Maintenance Charges: (CAM) a type of pass-through expense for common areas such as lobbies, hallways, and parking lots.

Forms Of Property Ownership

- Freehold Estate: highest level of ownership:
 - Fee Simple: property owners possess all ownership rights unconditionally.
 - Life Estate: right to use for life of tenant, but ownership reverts to original owner upon death of tenant.
- Leasehold Estate: lease; right to enjoy and possess property for a specified period of time.
- Single Ownership: a single person or entity owns the bundle of rights.
- Tenants In Common: a form of concurrent ownership. At termination, the share of property may be sold to any outside party.
- Joint Tenants: same as tenants in common except with right of survivorship. At termination (e.g. death of spouse), share reverts to other party.
- Condominium: a form of joint ownership. Property owner has fee simple on building. Land under the building and common areas owned collectively (master deed). Multiple parcels.
- Cooperative: all participating owners have a proportional share of the common property, e.g. stock in a corporation. Members may be voted in or out. A single parcel.

Real Property Documents and Transactions

- Title: assessment of quality of ownership rights in real estate.
- Title Assurance/Search: a process by which the quality of a property's title is researched and uncertainties about clear title are rectified.
- Deed: title of property is conveyed when grantor (seller) transfers ownership of parcel to grantee (buyer). Recorded with county recorder.
 - General Warranty Deed: the strongest form of title assurance. Offers comprehensive warranties about quality of title.

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- Special Warranty Deed: a fairly strong form of title. Essentially a general warranty deed with specific exceptions.
- Quitclaim Deed: weak form of title. Last owner relinquishes all rights to the property. No guarantees about prior owners.
- Adverse Possession: occupier comes to own the property by using it openly, without the permission of the owner of title, for a specified long period of time, usually 21 years or more.
- Property Survey: conducted by a licensed surveyor to accurately determine the boundaries of a parcel.
- Legal Description: a document containing the metes and bounds and other descriptive information about a parcel's boundaries and usage rights, easements, etc.
 - Metes and Bounds: a measure of land that describes the boundaries of the parcel. For example, "Then going north 233 feet to the right-of-way of Oak Street".

Property Ownership Vehicles

Various ownership vehicles offer different liability and tax advantages.

- Individual Ownership: full liability, single level of tax.
- General Partnership: not a taxable entity, tax liability and benefits pass through to partners. General partners have full liability.
- Limited Partnership: widely used for raising equity capital. Limited partners have liability limited to the amount invested, known as their at-risk amount. Tax liability and benefits pass through to partners.
- Corporations: legal entity which shields shareholders from liability. Double layer of taxation at the corporate level and the shareholder level.
- Subchapter S Corporation: a corporate entity that possesses a combination of corporate and partnership attributes. Limits on the number and type of shareholders. One level of taxation. Tax liability and benefits pass through to shareholders.
- Private Nonprofit: local development corporation. Usually qualify as a 501(c)3 tax-exempt organization.
- Joint Venture: negotiated agreement between two or more entities. May be a general partnership limited to particular real estate deal, or a corporation.
- Real Estate Investment Trust (REIT): real estate-dominated ownership vehicle with at least 100 beneficial owners, run by a trustee, has tax advantages.

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- LLC Limited Liability Corporation: a new ownership vehicle sometimes used for real estate.

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Forms of Security Interest

- Lien: a hold on the property's title preventing clear title until paid off. Any lien comes before the owner's interest at reversion (sale of property).
- Property Tax Lien: if local property taxes are not paid, there is an automatic first position lien placed on the property. If property is sold, this lien is satisfied before all others, including the first mortgage.
- Mechanics Lien: placed on the property by a contractor who was not paid for work (i.e., labor and/or materials) done on the property.
- Federal Income Tax Lien: if the property's record owner has failed to make appropriate federal income tax payments, the IRS may place a federal tax lien against the property.
- Mortgage Lien: lien placed on the property encumbering title due to financing on the property.
- Option Agreement: an option allows the buyer to control property for a specified time period, without actually buying it, while paying only a small fraction of its price. For example, an option on a \$100,000 property may be \$2,000 for six months. This model should be changed to your purposes and you should check with an attorney before using it.

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REAL ESTATE OPTION AGREEMENT

Date of Offer: _____

1. PARTIES. _____ (“Optionor”) hereby provides to _____ (“Optionee”) an option under the terms of this agreement (“Agreement”).

2. GRANTING OF OPTION. For the sum of \$ _____ received from Optionee, Optionor hereby grants to Optionee the exclusive option to purchase the real property (“Option”) legally described as Lot _____ Square _____ with improvements thereon known by street address as _____, a _____ in the _____ together with easements, rights, privileges, and appurtenances belonging to the same, and including all of the furniture, fixtures, furnishings, machinery, and equipment (“Personal Property”) owned by the Seller situated on or about this property (this real and personal property being collectively referred to as the “Property”).

3. OPTION PERIOD. The Option shall run for _____ days only starting from the Date of this Agreement.

4. EXERCISE OF OPTION. The Optionee may exercise this Option at any time prior to the expiration of the Option Period by providing written notice to the Optionor.

5. PURCHASE PRICE. The purchase price (“Purchase Price”) of the Property is _____ Dollars (\$ _____).

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Simultaneous with the Optionee's exercise of the Option, the Optionee must deposit 25 percent of Purchase Price ("Deposit") with _____, ("Escrow Agent"). The amount of the money previously paid by the Optionee for the Option will be credited in full toward the Deposit. The remainder of the Purchase Price must be paid by Optionee at Settlement, as defined below. The Deposit will be held in an interest-bearing account at _____ with all interest applied as part of the Deposit, under the terms of the Escrow Agreement, attached as Exhibit 1.

6. FAILURE TO EXERCISE OPTION. If the Optionee does not exercise the Option prior to the expiration of the Option Period, all amounts paid by Optionee for the Option shall be retained by the Optionor, and neither the Optionor nor the Optionee shall have any further rights or claims against the other.

7. SETTLEMENT. If Optionee exercises its Option to purchase the Property, Optionee must settle on the purchase of the property within _____ days from the date that the Option is exercised ("Settlement" or "Closing"). After exercise of the Option, Optionee agrees to take all necessary actions, in a commercially reasonable manner, in order to make full Settlement in accordance with the terms of this Agreement including but not limited to reviewing the title report, notifying the Optionor as to defects, completing any environmental, engineering, structural, or other test that it deems necessary, and pursuing financing for the purchase of the Property.

At Settlement, and as a condition to Optionee's obligations hereunder, Optionee shall be able to obtain a Standard ALTA Form B-1086 owners' marketability policy at normal rates in an amount not less than \$ _____, insuring that title to

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the Property is conveyed free of any encumbrances or defects, except as waived in writing by Optionee. At Settlement, in addition to all other documents required to be delivered by the provisions hereof (a) Optionor shall deliver to Optionee a bill of sale for the Personal Property, an assignment of such insurance policies and service contracts on the Property as shall be assignable and assigned at the request of Optionee, all books and records pertaining to the operation of the Property, an assignment of leases, such certificates, permits, and licenses, with respect to the Property as shall be assignable, any plans and specifications of the Property in Optionor's possession; and (b) Optionee shall deliver to Optionor an indemnification for security deposits turned over to Optionee.

As of the Settlement date (a) subject to the provisions of paragraph 15 below, no part of the Property shall have been acquired, or shall be about to be acquired, by any governmental authority or agency in the exercise of its power of eminent domain or by private purchase in lieu thereof, nor shall there be any threat or imminence of any such acquisition or purchase; and (b) any representations and warranties as set forth in this Agreement shall true and correct.

If Optionee exercises the Option, the Optionor shall deliver to the Title Company or other agency ("Title Company") designated in paragraph 9 below, such affidavits and indemnities, and/or establish such escrow accounts, as may be requested by the Title Company in order to remove exceptions from the title policy for unrecorded easements, unfiled mechanic's or materialmen's liens, litigation, tax liens, unpaid special assessments, unpaid water and sewage charges, together with such other documentation and evidence as may be requested by the Title Company concerning the right, power, and authority of Optionor to execute the Deed and all other

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documents executed hereunder. Optionee agrees to have the deed of conveyance recorded promptly.

In the event that the Optionor fails to consummate Settlement in accordance with the provisions of this Agreement, the Optionee may sue for specific performance as Optionee's sole legal remedy, or at its sole option, request the return of the Deposit plus accrued interest.

8. PLACE OF SETTLEMENT AND TITLE COMPANY. If Optionee exercises the Option, Settlement is to be made at the Title Company or other agency designated by Optionee in paragraph 9 below to examine the title. Optionee shall provide the Optionor with written notice of the date of Settlement at least _____ days prior to the Settlement. (# of days) The parties shall be deemed to have provided good and sufficient tender of performance under the terms of this Agreement by depositing that part of the Purchase Price to be paid in cash, the deed of conveyance for execution, and such other papers as are required of either the Optionor or Optionee by the terms of this Agreement with the Title Company or such other agency within the time above provided for the consummation of this Agreement.
9. TITLE. Optionee hereby agrees to order, within seven (7) business days of the exercise of the Option, the examination of the title from _____ (name of title company) ("Title Company"), a survey (if required), and the preparation of all necessary conveyancing papers, at Optionee's expense, provided, however, that if upon examination the Optionee objects to the title as defective or unmarketable, and is not remedied as detailed below, the Optionor hereby agrees to pay the cost of the examination of the title. **THE OPTIONEE HAS THE RIGHT TO NAME AND**

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EMPLOY THE TITLE INSURANCE COMPANY, SETTLEMENT AGENT, ESCROW COMPANY, OR TITLE ATTORNEY OF ITS CHOICE.

All claims for defects in or unmarketability of title by Optionee shall be delivered to Optionor within (15) days of issuance of the title report and shall be deemed waived if not so delivered. To the extent that any title item or matter to which Optionee objects consists of any existing deed of trust, lien for unpaid bills for utilities (including water and sewer), real property taxes, or work performed on or services provided for the Property, or other lien created by Optionor's action or inaction, the Optionor shall be obligated to discharge and remove such items or matter regardless of cost. If other defects in the title are curable within a period _____ days and the cost to cure is not in excess of \$ _____ Dollars, (\$ _____), then Optionor shall be required to proceed with diligence and in good faith to remedy such defects. Any time periods within which Optionee otherwise would be required to take any action under this Agreement shall be tolled during such period but only if such period of cure actually delays Optionee's Settlement.

Issuance by a title company of a title insurance commitment naming Optionee as the proposed insured for any owner's policy of title insurance on American Land Title Association standard form owner's marketability policy (ALTA Form B-1086, as from time to time amended), conforming to the requirements of this Agreement, shall be conclusive evidence of marketability of title.

In the event that, subsequent to the date of the Title Company's commitment but prior to Settlement, any lien, defect, encumbrance, or other item affecting title arises (which were not reflected on the commitment), Optionor shall provide notice to

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Optionee thereof. If such matter can be removed by the payment of _____ Dollars, (\$ _____), or less in the aggregate, Optionor hereby agrees to remove such matter. If such matter cannot be so removed, Optionor shall immediately notify Optionee and Optionee may either (a) waive its objection to such matter or (b) elect to terminate this Agreement, in which event the Deposit will be returned to Optionee and neither party shall have any further liability to the other.

The Property, including the aforesaid personal property, is sold free of encumbrances, except as stated herein. Title is to be good of record and marketable, subject, however, to covenants, rights of way, easements, conditions, and restrictions of record, if any, approved by Optionee in writing; such approval is not to be unreasonably withheld.

10. DEED. Optionor agrees to execute and deliver at Settlement a good and sufficient _____ warranty deed.

(deed type)

11. ADJUSTMENT. Rents received, taxes paid, water rent, sewer, insurance, and interest on existing encumbrances, if any, cost of fuel in storage tanks, salaries and accrued benefits to employees (if any), and operating charges (including, without limitation, utility charges) are to be adjusted to the date of Settlement. Rental security deposits, if any, plus interest shall be transferred to Optionee at the time of Settlement. If, in Optionee's determination, such security deposits plus interest are less than the amount of principal and interest that should have been transferred by Optionor pursuant to leases and _____, the Purchase Price shall be reduced by the amount of such difference. Taxes, general and

(local law and regulations)

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special, are to be adjusted according to the certificate of taxes issued by the collector of taxes, if any.

12. CLOSING AND RECORDING COSTS. Examination of title (except as otherwise provided above), tax certificate, conveyancing, notary fees, survey (if required), State revenue stamps (if any), and all recording charges, including those for a purchase money trust (if any) are to be at the cost of the Optionee. Transfer and recordation taxes shall be equally divided between Optionor and Optionee; however, the parties agree that if Optionee qualifies for tax exemption under D.C. Code § 47-3503(b), Optionee will be responsible for payment of all transfer and recordation taxes incurred in the transfer of the Property and shall receive a credit against the Purchase Price from Optionor of the amount of the transfer tax that would have been due if Optionee had not qualified for this exemption.

13. TENANCIES. The Property is sold and shall be conveyed subject to any existing tenancies. After exercise of the Option by Optionee, Optionor shall not modify the terms of or terminate any such tenancies, except for nonpayment of rent without the prior written consent of Optionee, which shall not be unreasonably withheld. No lease entered into after execution of this Agreement may be greater than one year.

After exercise of the Option, Optionor agrees to notify Optionee of any vacancies in the premises within five (5) days of Optionor's knowledge of such vacancies. If vacancies arise, Optionor agrees, at Optionee's option, to (1) fill such vacancies from a priority list ("List") of new tenants provided by Optionee to Optionor so long as these new tenants meet the Optionor's reasonable credit and rental history requirements or (2) keep unit(s) vacant as long as the Purchaser requests in writing, forty-eight (48) hours after this notification is received from Optionor, that Optionor

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keep the unit(s) vacant. Optionor agrees to keep such unit(s) vacant so long as Optionee agrees to pay rent (at the rate payable immediately prior to such vacancy) to the Optionor on unit(s) kept vacant. Under no circumstances shall Optionee authorize any unit(s) kept vacant under this contract to become occupied except by written consent of the Optionor.

14. RISK OF LOSS. Optionor assumes the risk of loss or damage to the Property by fire or other casualty until the executed deed of conveyance is delivered to Optionee and is recorded for him by the Title Company making the Settlement.

15. CONDITIONS AND OPERATION OF PROPERTY. All written notices of violations of statutes, municipal orders, or regulations issued by any department of the jurisdiction in which the Property is situated, or prosecutions in any of the courts of the jurisdiction in which the Property is situated on account thereof, against or affecting the Property that have been received by Optionor as of the date of this Agreement shall be complied with by the Optionor and the Property conveyed free thereof. Optionee agrees that, except as expressly provided herein, Optionor has made no representations, warranty, or other statement as to the physical condition, operation, or any other matter or thing affecting the Property. Optionee understands that the Property is offered in AS IS condition as of the Date of Agreement.

Optionor shall: (a) deliver the Property in substantially the same physical condition as of the Date of Agreement; (b) not defer normal maintenance of the Property during the period from the Date of Agreement to the date of Settlement; (c) not enter into, modify, or terminate any maintenance or service contracts relating to the Property prior to the date of Settlement without the prior written consent of Optionee;

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and (d) maintain in force all insurance coverage (including liability and Property damage) in force with respect to the Property as of the Date of Agreement.

If, subsequent to Optionee's exercise of the Option and prior to Settlement, the Property shall be destroyed or damaged by fire, vandalism, or other casualty, or if any proceeding, judicial, administrative, or otherwise, which shall relate to the proposed taking of any substantial portion of the Property by condemnation or eminent domain or any action in the nature of eminent domain, or the taking or closing of any right of access to the Property is instituted or commenced (an "Event"), then this Agreement, at the option of the Optionee, shall become null and void and the Deposit plus any interest thereon shall be returned forthwith to the Optionee.

In the case of fire, vandalism, or casualty, if the Optionee elects not to terminate this Agreement, the Optionor shall be entitled to receive and shall apply to the Property insurance proceeds equal to the cost of repairing the Property to the extent necessary (1) to protect and preserve the Property until Settlement or (2) required by governmental authority. At Settlement, the Optionor shall assign and/or pay to the Optionee all insurance proceeds (and other considerations in action, if any) collected or claimed with respect to said loss or damage, plus any deductible or self-insured amount, to the extent such insurance proceeds and other amounts are not paid to Optionor and applied pursuant to the preceding sentence.

In the case of taking by condemnation or eminent domain, if the Optionee elects not to terminate this Agreement, the Optionee shall be credited with or be assigned all the Optionor's right to any proceeds therefrom.

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16. INSPECTION BY OPTIONEE. Optionee and/or its agent and representatives shall have the right at any time during the Option Period to enter onto the Property with prior notice to Optionor and to make any or all of the tests, studies, and examinations desired by Optionee, at Optionee's sole expense. Optionee shall, at its own expense, promptly repair any damage done to the property. Optionor shall make reasonably available to Optionee access to all common areas and units in the Property, including but not limited to lobbies, storage and laundry rooms, maintenance and mail rooms and allow Optionee and its agents and/or representatives ingress and egress to all the same for the sole and exclusive purpose of making the aforesaid studies, investigations, and tests. Optionor also will allow Optionee reasonable access to Property management records. Optionee shall have the right to conduct Phase One and Phase Two Environmental Studies at Optionee's cost. The information contained therein will be the property of _____.

17. CHOICE OF LAW. This Agreement, the rights and obligations of the parties hereto, and any claims or disputes relating thereto shall be governed and construed in accordance with the laws of the _____.

18. BROKERAGE. Optionor and Optionee agree to indemnify and hold the other party harmless from any and all costs, expenses, or damages resulting from any claims for brokerage fees or other similar forms of compensation made by any real estate broker or any other person or entity because of the sale of the Property hereunder.

19. ACCEPTANCE; DATE OF AGREEMENT. This Agreement must be ratified by the Optionor, within _____ business days from the date set forth under the title hereof ("Date of Offer"), in order to be effectual and binding. The date of this

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Agreement (“Date of Agreement”) shall be the date on which this Agreement is ratified and accepted as reflected below.

20. BINDING EFFECT; ENTIRE AGREEMENT. Optionee and Optionor mutually agree that this Agreement shall be binding upon them and their respective heirs, executors, administrators, successors, and assigns; that this Agreement contains the final and entire Agreement between the parties hereto, and that the parties shall not be bound by any terms, conditions, statements, warranties, or representations, oral or written, express or implied, not herein contained. This Agreement can be modified subsequently only by written agreement, executed by both parties.

21. ASSIGNMENT. The Optionor or Optionee may assign its rights, duties, and obligations under this Agreement.

22. GENERAL PROVISIONS. (a) In the event that mortgages are used rather than deeds of trust, the word “mortgage” shall be substituted automatically; (b) if this Agreement provides for the assumption of existing trust(s) or for purchase subject to existing trust(s), it is understood that the balance of such trust(s) and the cash down payment are approximate amounts; (c) Trustees in all deeds of trust are to be named by the parties secured thereby; (d) The Property is to be conveyed in the name(s) to be designated in writing by Optionee prior to Settlement; (e) Optionor shall furnish any pertinent information required by Optionee or his financing agency in reference to obtaining a loan commitment and in general reasonably cooperate, at the Optionee’s sole expense and obligation, with the Optionee’s acquisition of the Property; and (f) the words “Optionor,” “Optionee,” all pronouns, and any variations thereof shall be deemed to refer to the masculine, feminine, neuter, singular, or plural and the identity of the person or entity as the context may require.

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23. NOTICES. All notices required or permitted herein shall be in writing and effective as of the date on which such notice is mailed in any United States Post Office, by certified or registered mail, postage prepaid, or hand-delivered, to Optionor or Optionee (as shall be applicable) at the address designated herein, or to such other address as the parties may designate in writing from time to time.

24. ACKNOWLEDGEMENT. We, the undersigned, hereby, ratify, accept and agree to the above and acknowledge it to be our Agreement.

Optionee

Optionor

DATE OF RATIFICATION
AND ACCEPTANCE
(DATE OF AGREEMENT)

_____, 19____

_____, 19____

Address of Optionee:

Address of Optionor:

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SECTION C: CLEANING THE SITE

The information in this section is dated between fall 1997 and spring 1998. Therefore, some additional programs have been added.

REGION 5 VOLUNTARY CLEANUP PROGRAM

Essentially every state struggles with the difficulty of unused manufacturing facilities and industrial sites. This is a particular challenge in the US EPA Region 5 states: Illinois, Indiana, Michigan, Minnesota, Ohio, and Wisconsin. Local governments, past owners of properties, environmental agencies, economic development departments, communities, and developers have all sought ways to revitalize these dormant properties called brownfields. It is the “real and perceived” contamination that has stunted the redevelopment of many of these sites. In order to expedite redevelopment, the US EPA has assisted states in creating their own voluntary cleanup programs. The following pages will describe each state's program, progress to date, and successful endeavors. Contracts are provided for hand-copy-only users.

Illinois Voluntary Cleanup Programs

Site Remediation Program -

The Illinois Environmental Protection Agency (IEPA) started their Voluntary Remediation Program (VRP) in July 1993. Through early 1998, 81 sites had entered the program, with five sites receiving “Certificates of Completion.” The intent of the program is to provide Remediation Applicants (i.e., any persons seeking to perform or performing investigative or remedial activities) the opportunity to receive review and evaluation services, technical assistance, and no further remediation determinations from the IEPA. The IEPA intends this program to be flexible and responsive to the requirements of Remediation Applicants (RAs), to project constraints, and to variable remediation site conditions. The goal(s) and scope of actions at program remediation sites are normally defined by the RA subject to regulations. Successful participation in the program results in the issuance of a No Further Remediation letter by the IEPA.

Questions or comments? Contact:
Bob O'Hara
Epa4145@epa.state.il.us
(217) 524-5533

(Note: For a more comprehensive description, see the additional information on Illinois presented later in this section.)

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Indiana Voluntary Cleanup Programs

The Indiana Department of Environmental Management (IDEM) started their Voluntary Remediation Program (VRP) in July 1993. Participants in the program must submit a \$1,000 check and an application describing the history of the site, including the results of a Phase I site assessment. A Voluntary Remediation Agreement must be signed that includes provisions for cost recovery of IDEM time and effect on the site. IDEM will issue a Certificate of Completion and the Governor's office will issue a Covenant Not To Sue upon successful completion of a remediation. There is currently no financial assistance available. As a recipient of a brownfields pilot grant through its site assessment program, IDEM has performed three brownfield assessments, one in each of the northwest Indiana cities of Gary, Hammond, and East Chicago. Two additional sites have been sampled in smaller communities; both sites have potential purchasers and redevelopment plans. IDEM performs a hybrid assessment that is neither a traditional Superfund assessment nor a Phase II. Their "as clean" levels are set at the same levels as the VRP industrial reuse levels. IDEM is conducting community outreach and education meetings or workshops throughout the state to market and explain their brownfields program and services. Through its Site Assessment program, IDEM is developing a brownfield application package that will not only allow the agency to select sites upon which it will conduct the assessments, but will also help communities determine which sites in their communities would be most suitable for brownfields redevelopment efforts. Finally, IDEM will utilize state funds to target and assess sites for immediate removals under state authority, concentrating on the smaller communities where it believes they can achieve higher results with the state's limited resources.

Questions or comments? Contact:
Peggy Dorsey
pdorsey@dem.state.in.us
(317) 308-3058

Michigan Voluntary Cleanup Programs

The Michigan Environmental Response Act (MERA) of 1982 established the means for the state to fund contaminated site cleanups and recover costs from responsible parties. In 1990, the Polluters Pay amendments to this act established strict, joint, and several liability for potentially responsible parties and provided for administrative orders and Covenants Not To Sue for use with brownfields. In 1995, the state cleanup law was again amended and is now known as Part 201 of the Natural Resources and Environmental Protection Act. The amendment was specifically designed to encourage the re-use of brownfields by changing the liability standard to causation, allowing parties to purchase contaminated property without liability after completing a baseline environmental assessment and providing for due care in the re-use of the property, and

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providing for use-based cleanups as well as a lower cleanup standard. The state cleanup authority was supported with a \$425 million bond issue, the Environmental Protection Bond, established in 1989. Of the bond, \$45 million was specifically designated for brownfield redevelopment through the Site Reclamation Program. The Site Reclamation Program, which started operation in 1992, provides a total of \$35 million for grants to local units of government to investigate and clean up sites of contamination where a developer has been identified.

The remaining \$10 million is used to provide grants, also to local units of government, for brownfield site assessment. Site assessments can include Phase I and II assessments and limited remedial investigations. Grants cover 100 percent of eligible costs. Fifty-six grants for \$22.6 million have been issued. Nine grants, for a total of \$6 million, have been completed and have generated approximately \$50 million in capital investment and 400 jobs. US EPA brownfield site assessment funds are a valuable supplement to this program and have allowed assessments to take place at sites and in communities that otherwise would not have received assistance. In 1995, the Department of Environmental Quality (DEQ) performed 10 EPA site assessments in Detroit and plans another six throughout the state. The DEQ estimates that at least 45 percent of its workload is brownfield-related.

Questions or comments? Contact:
Jim Linton
lintonj@state.mi.us
(517) 373-8450

Minnesota Voluntary Cleanup Programs

The purpose of Minnesota's Voluntary Investigation and Cleanup (VIC) Program is to investigate and remediate contaminated land and bring it back into productive use by providing technical assistance and liability assurances. The VIC Program provides five broad categories of written liability assurances that include:

- Technical Assistance Approval Letter
- No Action Letters or No Action Agreements (No Action Agreements include a Covenant Not To Sue)
- Off-Site Source Determination Letters or Agreements
- No Association Determination Letters
- Certificates of Completion (partial and full cleanups)

Since 1988, 670 sites have entered the VIC Program and 393 have been cleaned up and found acceptable for purchase, development or refinancing, or transferred to other regulatory programs. There are no application fees; however, oversight costs are

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recovered by billing on a quarterly basis at a rate of \$75 to \$85 per hour. Under VIC Program oversight, more than 2,500 acres of industrial and commercial property have been returned to productive use, providing environmental and economic benefits to communities without cost to Minnesota's taxpayers.

The VIC Program is an integral part of two funding programs created to address investigation and cleanup of contaminated sites: the Contamination Cleanup Grant Program, administered by the Minnesota Department of Trade and Economic Development, and the Tax Base Revitalization Account, administered by the Metropolitan Council. The Contamination Cleanup Grant Program provides funds to investigate and cleanup contaminated sites, thus offering a greater opportunity to convert contaminated property into a marketable asset. The Tax Base Revitalization Account provides grants for properties in the Twin Cities metropolitan area for polluted land cleanup. To be eligible for either program, a site must have a Response Action Plan (cleanup plan) approved by the MPCA, typically through the VIC Program. Under the oversight of the VIC Program, an 18-month pilot program was implemented in conjunction with the US EPA to demonstrate the potential effectiveness of using state-based voluntary cleanup programs to resolve the status of Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) sites that have not yet undergone sufficient characterization to prioritize them using the Hazard Ranking System scoring process. Thirty sites were involved in the pilot program. This program proved to be substantially more efficient and cost-effective than the traditional assessment process of Superfund. Based on the success of this pilot program, it was the recommendation of MPCA staff that EPA consider duplicating this program in other states. The MPCA Pre-Remedial Superfund Program interacts with the VIC Program to aid in the redevelopment of orphaned contaminated sites. This program is funded by the US EPA and has just over \$100,000 to conduct brownfields investigations on properties with high redevelopment potential, but where real or perceived levels of contamination limit redevelopment activity. These properties generally have no viable responsible party or voluntary redevelopment party and may be tax delinquent or abandoned. The MPCA works with local units of government to identify appropriate sites. MPCA staff conducts Phase I and limited Phase II investigations with the expectation that, by removing some of the uncertainty around contamination issues, redevelopment activity will be stimulated. Interested developers will sign up with the VIC Program to complete the site investigation and redevelopment process. These voluntary parties may be asked to reimburse the MPCA for some of the Pre-Remedial Phase I and Phase II activity expenses.

Questions or comments? Contact:

In Minneapolis Area:

Wayne Nelson

(612) 602-1406 All Other Areas:

Meredith Udoibok

dted@state.mn.us

Minnesota Trade and E.D. Department

Karen Kromer

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Minnesota Dry Cleaner Fund
(612) 297-3080

Ohio Voluntary Cleanup Programs

Ohio's Voluntary Action Program was initially established in June of 1994. Its privately driven approach is unique within EPA Region V. Final regulations were issued in 1997. A person undertaking a voluntary action to clean up his/her property may contract with consultants and/or contractors to perform investigations and cleanup activities. When the property has been cleaned up and meets the standards for its specified re-use, the owner must contract with a certified professional and certified laboratory to prepare a No Further Action letter and supporting documents to send to the Ohio EPA. A certified professional also must prepare a request for a variance from particular standards, if needed. Ohio EPA then can issue a Covenant Not To Sue based upon this No Further Action letter. Participants may be charged for technical assistance provided by the Ohio EPA on a fee-for-service basis, as well as be required to pay for insurance of Covenants Not To Sue. Financial assistance for sites is available in the form of low-interest loans administered by the Chamber of Commerce. The Property Revitalization Board serves as a "clearinghouse" for this and other available financial incentives. Sites with groundwater contamination are precluded from entering the program. Numerous sites have entered the program, with three sites receiving Covenants Not To Sue.

Questions or comments? Contact:
Theresa Long
Theresa.Long@epa.state.oh.us
(614) 644-2924

Wisconsin Voluntary Cleanup Programs

Wisconsin's voluntary cleanup program was established in 1978 under the Hazardous Substance Spill Law. The Spill Law established notification requirements, responsibility for environmental investigation and cleanups, and a hazardous substance spill fund. Since 1978, more than 90 percent of all sites cleaned up in Wisconsin have been cleaned up through this voluntary process.

To enhance the Spill Law and to encourage environmental cleanups by parties not responsible for contamination, the Wisconsin legislature developed the Land Recycling Law, which became effective in May 1994. This new law was designed to provide liability exemptions to encourage environmental cleanups, revitalize rural and urban areas, and return property to the tax base. The Land Recycling Law: exempts municipalities from cleaning up contaminated property acquired through tax delinquency

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or bankruptcy court order if the original discharge was not caused by the municipality; exempts lenders from responsibility for cleaning up contaminated property through foreclosure if they meet certain conditions; exempts purchasers from future liability when contaminated property is cleaned up by the purchaser and they meet certain conditions; delegates authority to political subdivisions to negotiate and recover costs for cleaning up property they own if it was contaminated by past owners, operators, and transporters (including landfills); and provides the DNR with the authority to file a superior lien for state-incurred cleanup action costs, except on residential properties. Under the Land Recycling Program, purchasers (i.e., current innocent landowners or those purchasing property) of contaminated property will be granted limited liability under the Spill Law for past releases on their property if they investigate and clean up the entire property with DNR oversight. There are currently 38 properties in the Land Recycling Program. After successfully cleaning up historically contaminated industrial sites in New Berlin, Cellular One received the first "Certificate of Completion" under Wisconsin's new Land Recycling Program in September 1995. (Cellular One entered the Land Recycling Program in May 1995, and the cleanup was completed less than four months later.) The DNR Land Recycling Program also developed a Brownfields Environmental Assessment Pilot Program and sought participation by municipalities statewide that have potentially contaminated properties. Under this federal and state funded pilot, DNR staff will conduct preliminary assessments at abandoned, tax delinquent, or bankrupt properties with development potential to determine if contaminants are present. Eleven communities were chosen to participate in this innovative pilot. These communities, with the DNR's help, can then market the properties for cleanup and development to get them back on the tax rolls with the possibility of returning more than 210 acres to productive community use.

Questions or comments? Contact:

Andrew Savagian

savaga@dnr.state.wi.us

—or—

Sam Essak

essaks@dnr.state.wi.us

(608) 266-2111

More Comprehensive Example:

Illinois VCP-

(These brief program notes are intended for summary purposes only. Hard copy users should read the following description of the Illinois program. It is illustrative of the depth of information available on the respective web sites of each state VCP.)

No Further Remediation Letter ("comprehensive") -

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The Illinois EPA is authorized to issue No Further Remediation (NFR) letters to those RAs who have successfully demonstrated, through proper investigation and, where warranted, remedial action, that all environmental conditions at their remediation sites do not present a significant risk to human health or the environment.

The NFR letter signifies a release from further responsibilities under the Illinois Environmental Protection Act ("Act") and is considered *prima facie* evidence that the site does not constitute a significant risk of harm to human health or the environment, so long as the site is utilized in accordance with the terms of the NFR letter.

The NFR letter must be filed with the Office of the Recorder or Registrar of Titles of the county in which the remediation site is located so that it forms a permanent part of the chain of title and thereby notifies future owners of the terms of the NFR letter. In some cases, the NFR letter may contain conditions that are necessary to ensure protection of human health and the environment (e.g. use of institutional controls or engineered barriers).

No Further Remediation Letter ("focused") -

In addition to the comprehensive NFR letter described above, the Illinois EPA is authorized to issue an NFR letter to those RAs who have demonstrated successful remedial actions for a release or threatened release of a specific contaminant(s) of concern. This focused NFR letter may appeal to those RAs trying to satisfy either a contractual relationship or a regulatory concern for a specific release of hazardous substances, pesticides, or petroleum. The focused NFR letter provides the RA with the IEPA's determination that a specific contaminant(s) of concern has been successfully remediated to a level that is protective of human health and the environment.

Program Authority -

The Illinois EPA is authorized to provide review, evaluation, and approval services for actions at remediation sites where hazardous substances, pesticides, or petroleum may be present and for which the remediation site owner requested such services in writing. For RAs other than the remediation site owner, written permission from the remediation site owner, or authorized agent of the owner, must be obtained for enrollment into the program. The written permission must clearly identify the remediation site for which the services are sought and must contain the original signature of the owner. An authorized agent is a person authorized by written consent or by law to act on behalf of a remediation site owner.

Relationship to Superfund/CERCLA -

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The United States Environmental Protection Agency (US\EPA) and the Illinois EPA have entered into a Superfund Memorandum of Understanding (SMOU) through which the US\EPA concurs that further response actions will not be required by the US\EPA at sites which have received an NFR letter. In addition, the US\EPA will not plan or anticipate federal action under CERCLA at an enrolled site, except in emergency situations.

Eligibility -

A remediation site is eligible for the program unless:

1. The remediation site is on the National Priorities List (SECTION B of 40 CFR 300);
2. The investigative or remedial activities for which Illinois EPA review, evaluation and approval are sought are required under a current state or federal solid or hazardous waste permit or are closure requirements for a solid or hazardous waste treatment, storage, or disposal site pursuant to applicable state or federal laws and implementing regulations (e.g., RCRA Part B, interim status closure; sites regulated by 35 Ill. Adm. Code 811-815);
3. The investigation or remedial action for which Illinois EPA review, evaluation, and approval are requested are required under state or federal underground storage tank laws and implementing regulations [e.g. Leaking Underground Storage Tank ("LUST") sites];
4. The investigation or remedial activities for which Illinois EPA review, evaluation, and approval are requested are required by a federal court order or an order issued by the USEPA and compliance with the program would be contrary to the terms of that order. Any person whose site is excluded above may utilize the program to the extent allowed by federal law, federal authorization, or by other federal approval.

Available Services -

The Illinois EPA is authorized and may agree to provide the following services under the program:

Review and evaluation of site investigation reports, remediation objectives reports, remedial action plans, and remedial action completion reports;

1. Sample collection and analyses;
2. Assistance with community relations;

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3. Coordination and communication between the RA and other governmental entities; and
4. Other activities as requested.

Illinois EPA program project managers will provide all reasonable assistance to RAs towards identifying regulatory requirements and obtaining Illinois EPA permits for the conduct of corrective action. However, evaluations of legal and regulatory interpretations are not within the purview of the program. Knowledge of, understanding of, and compliance with all applicable laws and regulations are the responsibility of the RA. For those RAs participating in the program, Section 58.4 of the act exempts certain state-issued permit requirements but does not exempt federally mandated permit requirements or state equivalents.

Enrollment in the Program -

Completion of the Site Remediation Program Application and Service Agreement Form (DRM-1) is required of persons requesting enrollment into the program. This form requires information on the remediation site, the RA, the property owner, and project objectives. In addition, the RA will be required to either: (1) make an advance partial payment in the amount of \$500 when submitting the application and service agreement, or (2) request that the Illinois EPA estimate the total costs to the Illinois EPA of providing the requested services and assess an advance partial payment not to exceed \$5,000 or one-half of the total anticipated costs to the Illinois EPA, whichever is less. If the second option is selected, form DRM-3 must be completed and attached to the application and service agreement. The Illinois EPA will assess and request an advance partial payment based on the information provided in DRM-3. Advance partial payments are not refundable.

Application and Service Agreement forms, with attachments and accompanying documentation as necessary, must be mailed or delivered to the address designated on the forms. Additional Application and Service Agreement forms are available from the Illinois EPA at the following address:

Illinois Environmental Protection Agency
Bureau of Land #24
Remedial Project Management Section
1021 North Grand Avenue East
P. O. Box 19276
Springfield, IL 62794-9276

Within 30 days of receipt of the Application and Service Agreement and any initial project documents, the Illinois EPA will approve or deny the application based on completeness and eligibility. If the Application and Service Agreement is incomplete, or

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actions are ineligible, or Illinois EPA resources are unavailable to provide the requested review and evaluation services, the Illinois EPA will issue a denial-of-services letter to the RA. Otherwise, if the Application and Service Agreement and attached documents are in good order and the advance partial payment has been paid, the Illinois EPA will issue an enrollment letter acknowledging receipt of the Application and Service Agreement and advance partial payment and identifying the Illinois EPA project manager assigned to the project.

Remediation Applicant (RA) Commitments to the Program -

Successful participation in the Program requires that a RA adhere to the four (4) stipulations contained in the Application and Service Agreement form. These include:

1. Conformance with the procedures of the act and implementing regulations;
2. Allowing for or otherwise arranging remediation site visits or other remediation site evaluation by the Illinois EPA when so requested;
3. Agreement to pay any reasonable costs incurred and documented by the Illinois EPA in providing such services under the program; and
4. Making an advance partial payment to the Illinois EPA for such anticipated services.

Conduct of Site Activities and Preparation of Plans and Reports -

All remediation site activities must be conducted by, or under the supervision of, an Illinois licensed professional engineer (LPE). Remediation site investigations must be performed to identify any recognized environmental conditions existing at the remediation site, the related contaminants of concern, and associated factors that will aid in the identification of risks to human health, safety, and the environment, the determination of remediation objectives, and the remedial design. Site investigations must satisfy data quality objectives for field and laboratory operations to ensure that all data are scientifically valid and of known precision.

All plans and reports submitted for review and evaluation must be prepared by, or under the supervision of, an Illinois LPE. Any plan or report submitted to the Illinois EPA for review and evaluation must be accompanied by a Site Remediation Program Form (DRM-2). The Illinois EPA has 60 days from the receipt of any plan or report to conduct a review and make a determination to approve or disapprove the plan or report, or approve the plan or report with conditions. If any plans or reports are submitted

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concurrently, the Illinois EPA's timeframe for review increases to a total of 90 days for all plans or reports so submitted.

Upon completion of the review, the Illinois EPA will notify the RA by certified mail of its final determination (approval or denial) for the plan or report.

Required Plans and Reports -

The four (4) required plans and reports for corrective action projects are:

1. Site Investigation Report
2. Remediation Objectives Report
3. Remedial Action Plan
4. Remedial Action Completion Report

Site Investigation Report -

All RAs must submit to the Illinois EPA a Site Investigation Report that identifies recognized environmental conditions existing at the remediation site, the related contaminants of concern, and associated factors. Such information will be used to aid in the identification of risk to human health and the environment, the determination of remediation objectives, and the design and implementation of a Remedial Action Plan. For large or complex projects, the Illinois EPA recommends the RA obtain Illinois EPA approval of a work plan for site investigation activities before work begins to avoid missteps and omissions.

If the RA has elected to seek a comprehensive NFR letter, a Site Investigation Report - Comprehensive Site Investigation must be prepared that identifies all recognized environmental conditions and all related contaminants of concern that may be expected to exist at the remediation site. The report must document the remediation site investigation performed as a two-phase environmental assessment. Unless an alternative is approved by the Illinois EPA, the Phase I environmental assessment must be conducted in accordance with the procedures described in the "Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process" (ASTM E 1527-94).

The Phase II Environmental Site Assessment is a remediation site investigation employing sampling, analyses, and field screening measurements to characterize the nature, concentration, and extent of contaminants of concern (if any) at the remediation

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site and the significant physical features of the site and vicinity that may affect contaminant fate and transport and risk to human health and the environment.

If the RA has elected to seek a focused NFR letter and has conducted a focused site investigation (e.g., a site investigation limited to specific contaminants of concern), a Site Investigation Report - Focused Site Investigation must be prepared. The Site Investigation Report (comprehensive or focused) must document, to the Illinois EPA's satisfaction, that the nature and extent of all contamination for which a NFR letter is sought has been fully characterized. In addition, data must be collected that meet minimum data quality objectives. Data quality objectives are qualitative and quantitative statements specified to ensure that data of known and appropriate quality are obtained.

The Illinois EPA has prepared an Analytical Quality Assurance Plan (AQAP) for the program. Adherence to the AQAP will ensure that analytical data will meet the program's data quality objectives and that all analytical data generated during the course of a project is valid and will support critical Illinois EPA determinations and decisions affecting the project. The RA has the option to use the AQAP, and therefore avoid the expense and delay involved in the development of a site-specific quality assurance plan. Copies of the AQAP are available through the Illinois EPA.

Remediation Objectives Report -

If the Site Investigation Report reveals evidence of the existence of one or more recognized environmental conditions, the RA must develop appropriate remediation objectives. Remediation objectives for the program are developed utilizing the Tiered Approach to Corrective Action Objectives (TACO) procedure set forth in 35 Ill. Adm. Code 742. The TACO procedure presents an approach to the development of remediation objectives that includes an option for the use of any of three tiers for developing applicable remediation objectives, the exclusion of pathways from further consideration, and the use of area background concentrations as remediation objectives. An understanding of human exposure routes is necessary to properly conduct an evaluation under this approach. In some cases, human exposure routes can be excluded from further consideration prior to any tier evaluation. The tier or combination of tiers used to develop remediation objectives will be dependent on site-specific conditions and remediation goals.

Tier 1 cleanup objectives are contained in five (5) tables. Values are based upon a presumption of either residential or industrial/commercial property use. Soil cleanup objectives are established for protection of Class I groundwater (35 Ill. Adm. Code 620.210) or Class II groundwater (35 Ill. Adm. Code 620.220) and for protection of human health from inhalation, soil ingestion, and groundwater ingestion. The lowest of the applicable exposure values is considered the remediation objective for the remediation site. The use of institutional controls (e.g., restrictive covenants, deed restrictions, negative easements, ordinances, highway authority agreements, etc.) will be required for those sites remediated for industrial/commercial property use.

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Tier 2 cleanup objectives are derived from the exposure models used to generate many Tier 1 remediation objectives, but allow site-specific information to be used to calculate remediation objectives. Additional soil sampling data is required, although this effort typically entails only a minimal incremental effort relative to the Tier 1 evaluation. Derivation of less stringent Tier 2 remediation objectives may alleviate corrective action requirements in many situations, but may be an unwarranted expense in others. The use of both institutional controls and engineered barriers may be considered in developing remediation objectives.

Tier 3 provides RAs the opportunity to conduct variable scale risk assessment activities and more complex contaminant fate and transport modeling than the standard Tier 2 exposure models. RAs may demonstrate protection of human health and the environment by less stringent remediation objectives, by implementing engineered barriers, institutional controls, post-remediation use restrictions, or by any combination of these.

Exclusion of pathways from further consideration is based on effective source control coupled with site conditions and an appropriate institutional control that effectively prohibits human exposure through a given pathway. If an exposure route is excluded from consideration, then no numeric cleanup objective need be developed for the exposure route.

For remediation sites where the background level for a regulated substance does not pose an acute threat to human health or the environment, the RA may elect to develop remediation objectives appropriate for the remediation site using area background procedures in TACO. RAs will be required to submit a Remediation Objectives Report containing the supporting documents and explanation for the selection of the remediation objectives. If, in addition to remediation objectives, other types of remediation measures are required, the report must describe these measures and demonstrate their effectiveness for remediating the recognized environmental conditions to be addressed.

Remedial Action Plan -

If concentrations of contaminants of concern exceed the remediation objectives established for the remediation site, the RA must submit a Remedial Action Plan designed to meet remediation goals (i.e., remediation objectives and site-specific response actions). The Remedial Action Plan must describe the proposed remedy and evaluate its ability and effectiveness to achieve the remediation objectives approved for the remediation site.

Remedial Action Completion Report -

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Upon completion of all corrective actions, the RA must submit a report attesting that all remediation objectives, site-specific response actions, and program data quality objectives have been successfully attained.

Recording of the No Further Remediation Letter –

Within 30 days of the Illinois EPA's approval of a remedial action completion report, the Illinois EPA will issue a NFR letter applicable to the remediation site. The RA receiving the NFR letter from the Illinois EPA must submit the NFR letter to the Office of the Recorder or the Registrar of Titles of the county in which the remediation site is located within 45 days of receipt of the NFR letter. The Office of the Recorder or the Registrar of Titles must accept and record the NFR letter in accordance with Illinois law so that it forms a permanent part of the chain of title for the remediation site. This will notify future purchasers of the remediation site's participation in the Program and whether any engineered barriers or institutional controls need maintenance to protect human health and the environment. Within 30 days of recording, the RA must obtain and submit to the Illinois EPA a copy of the recorded letter demonstrating that the letter has been recorded as issued.

Tailored Participation –

Each project is unique in regard to its goals, remediation site conditions, scope, budget, and schedule. The Illinois EPA recommends that a RA evaluate all of these factors to determine an appropriate course of action for the conduct of voluntary preventive and/or corrective action. The inherent flexibility in the program allows RAs to tailor participation in response to project economics.

A RA may elect to submit the Site Investigation Report, the Remediation Objectives Report, the Remedial Action Plan, and the Remedial Action Completion Report individually, or as a complete first submittal. Often, where a release of contamination is well defined and remedial actions consist of contaminant removal, this all-inclusive submittal may save considerable time and expense.

The sequential submittal and agency approval of required documents (as well as elective documents such as work plans for site investigations and risk assessments) may be desired where contamination is not well defined, where remedial actions must be more thoroughly evaluated, and where the project schedule allows. This approach affords a much greater degree of flexibility in the establishment of remediation objectives.

Deferral of Enforcement Actions –

Although Illinois EPA enforcement actions may be deferred for those remediation sites enrolled in the program, enrollment does not limit the Illinois EPA's authority to take

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action in response to a release or substantial threat of a release of a hazardous substance, petroleum, or pesticide.

The Illinois EPA reserves the right to initiate enforcement actions at any program site where:

1. Conditions at the site present an immediate and significant risk of harm to human health and the environment.
2. Corrective actions at the site are not being pursued in an effective manner, in a manner protective of human health, or with an appropriate sense of urgency.

Selection of Environmental Consultants and Contractors –

Selection of environmental consultants, labs, and contractors should be based upon a RA's thorough evaluation and confirmation of the consultant's or contractor's qualifications and experience.

Although the Illinois EPA cannot recommend or otherwise provide any determinations on the qualifications of prospective environmental consultants, labs, or contractors, the Illinois EPA and the Illinois Department of Commerce and Community Affairs have prepared a booklet entitled *How to Select an Environmental Consultant*. This booklet provides some general guidelines on selecting and evaluating an environmental consultant.

Review and Evaluation Licensed Professional Engineer (RELPE) –

An RA may elect to contract with a Review and Evaluation Licensed Professional Engineer (RELPE) who will perform review and evaluation services on behalf of and under the supervision of the Illinois EPA relative to remediation site activities.

Prior to entering into a contract with a RA, the regulations require the RELPE to provide the RA with the following information:

- Firm Name
- Address
- Telephone/fax
- Principal officials and titles
- Number of full-time employees
- Business structure (corporation, partnership, limited liability partnership, limited liability company, professional services corporation)

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- License number issued by Secretary of State, if any
- License number issued by Dept. of Professional Regulation, if any
- Name of Illinois Registered Managing Agent
- Names of insurance carriers and amount of coverage: Worker's Compensation, General Liability, and Professional Liability.
- If the stated professional liability policy includes coverage for "environmental" claims relative to release of pollutants. If not covered, or covered by a different carrier or in a different amount, the information must so state.
- If the firm or owners has ever filed bankruptcy. If "yes," the information must state when and explain the circumstances.
- If the firm is an outgrowth, result, continuation, or organization of a former business. If "yes," the information must explain the background.
- A list of the RELPE's (and other) key full-time employees who will participate on this project with the RELPE. The information must provide resumes for each, including Illinois P.E. License #, certifications, project role, years of experience in related work, and education.
- A list of at least five projects similar in nature for which the RELPE has performed environmental preventive or corrective action, and identifying the role of the RELPE.
- If employees are to be assigned to the project in compliance with 29 CFR 1910.120 (Hazardous Waste Operations training and medical surveillance) as applicable to their role on the project.

Prior to entering into the contract with the RELPE, the RA must identify to the Illinois EPA the potential terms of the contract. At a minimum, the contract must provide that the RELPE will submit any plans or reports directly to the Illinois EPA, will take his or her directions for work assignments from the Illinois EPA, and will perform assigned work on behalf of the Illinois EPA. In addition, the contract must set forth the scope of work for which the RA has engaged the RELPE, the effective date of the contract, and that costs incurred by the RELPE shall be paid directly to the RELPE by the RA.

Reasonable costs incurred by the Illinois EPA for oversight of the RELPE and its review and evaluation services must be paid by the RA directly to the Illinois EPA in accordance with the terms of the review and evaluation services agreement.

Project documents submitted for review on behalf of the RA may be submitted concurrently to both the Illinois EPA and the RELPE, but all subsequent communications, telephone calls, meetings, etc. should be coordinated with the assigned Illinois EPA project manager. The RELPE's review/evaluation notes, comments etc. must be addressed to the Illinois EPA for final approval, prior to communication back to the RA. The RELPE will be given appropriate procedural

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guidance and checklists to use in review/evaluation activities in order to minimize Illinois EPA administration.

In no event shall the RELPE acting on behalf of the Illinois EPA be an employee of the RA or the owner or operator of the remediation site or be an employee of any other person the RA has contracted to provide services relative to the remediation site.

Reimbursement of Project Costs Incurred by the Agency –

RAs are required to reimburse the Illinois EPA for services. Illinois EPA-incurred costs that may be requested for reimbursement are:

1. Personal services costs and indirect costs;
2. Illinois EPA travel costs;
3. Professional and artistic services contractual costs;
4. Laboratory costs;
5. Other contractual costs; and
6. Other costs as agreed.

The first request for payment will reflect the deduction of the advance partial payment from the costs incurred. A request for payment will not be sent until the advance partial payment has been depleted. Unexpended portions of advance partial payments are not refundable. Payments for costs incurred by the Illinois EPA for the performance of services under the program must be submitted to the Illinois EPA within 45 days after receipt of the request for payment. Such payments must be mailed or delivered to the address designated by the Illinois EPA in the request for payment.

In addition, a NFR assessment fee based on Illinois EPA-incurred costs up to a maximum of \$2,500 will be due within 45 days after receipt of the request for final payment.

Withdrawal from the Program –

Enrollment and continued participation in the program are wholly voluntary. A RA may, at any time, notify the Illinois EPA in writing that the Illinois EPA services previously requested are no longer wanted. The Illinois EPA will provide to the RA a final request for payment for services provided within 180 days after receipt of the withdrawal notice. Advance partial payments are not refundable upon withdrawal from the program.

SITE REMEDIATION TECHNIQUES

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The cost of remediation is likely to be a very expensive aspect of any brownfield project and is the major deterrent, with the exception of possible liability, for most developers. The cost and techniques of remediation are constantly changing. Listed below are several widely accepted techniques. This list is by no means exhaustive, and many techniques can be used in combination with others. At the end of this section there are hyper-links to other sources that will be helpful in determining and assessing remediation cost, for our online users.

The first six items are remediation strategies that pertain to many types of contamination situations. The following pages contain brief descriptions of specific techniques and technologies.

Remediation Strategies

Haul/Bury –

Description: Contaminated soil/demolition debris is hauled/buried to construction material dumps or low level waste dumps so the property can be reused. This method is in wide practice. Cost is extremely high to remove large mass volumes of material for proper waste disposal.

Comments: Hauling costs/burial costs are very high, and it is expensive to sort out previously buried material.

In-situ-No Treatment –

Description: Many times limited contamination should be left alone. The limited amount of contamination, if removed, could disrupt the ecosystem more than if the property were left undisturbed.

Comments: Very low to moderate contamination. Lender acceptance an issue. If contamination has been tested and levels are below state-mandated action limits and are non-volatile, they may be left in place.

Remove Hot Spots –

Description: After testing site systematically, those locations well above action limits can be removed off-site, while other material can be treated on-site.

Comments: Good cost minimizing strategy.

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Selective On-site Burial –

Description: Highly contaminated but non-mobile and inert contaminated material is concentrated on-site and buried. Areas where contamination was removed is then available for use. Areas used to store contaminated material could be used for roadways and landscaping sites, perhaps under publicly owned areas such as roadways.

Comments: Low cost, saves hauling and burial expense. Market acceptance an issue. May be appropriate for non-volatile substances. Deed restrictions may apply.

Encapsulation –

Description: Encapsulation methods exist for completely covering hazardous asbestos in buildings. The same method is used for contaminated property. The property surface is paved and is available for limited use (i.e. parking lots); soil below paving is clay, thus preventing groundwater contamination. This method should not be considered when there is volatile substance contamination. Extensive assessment is necessary. Accepted practice in many states.

Comments: Low to moderate cost. Moderate risk with proper assessment and analysis. Bank acceptance an issue. May require deed restrictions.

Partial Encapsulation or Capping –

Description: Most undesirable contamination is removed while less contaminated soil is contained under clay or a plastic barrier covered with soil. Surface users are protected, but lower soils may be affected.

Comments: State regulators and lenders may not accept capping in all cases. Barriers may have finite effective life. Groundwater may be affected. May require deed restrictions.

Remediation Techniques

Absorption –

Description: The addition of absorbent materials to soil promotes the soaking up of contamination like a sponge. Uses materials such as hay, sawdust, cement, kiln dust, fly ash, furnace slag, and clay minerals such as zeolite, bentonite, and koalinite.

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Mixtures of soil and absorption materials must be combined carefully so soil integrity is not destroyed.

Comments: Low to moderate cost. Absorbent materials may be expensive. Materials need to be removed if volatile.

Biological Treatment –

Description: To promote biodegradation (breaking down of contamination due to biological processes) specific microbes or communities of microbes can be applied to the soil. Microbes will break down soil without the soil being removed. Application of microbes are tested on the property prior to full treatment. Field conditions such as oxygen levels, pH levels, and temperature must be extensively monitored to sustain microbe growth levels.

Comments: Moderate to high cost. Extensive laboratory modeling costs. Field testing cost. Sampling and monitoring costs. Microbe costs. Good alternative for large tracts of land. Appropriate for petroleum products.

Soil Washing/Steam Stripping –

Description: Many volatile organic compounds that are found in low concentrations can be removed by the application of steam. This technique requires a flushing or injection of water in contaminated areas. Water is drawn off into a vacuum stream steam stripper mechanism which removes the organic contaminants. Note that this process can only treat contaminants that are highly soluble in water.

Comments: Low to moderate cost. Sampling costs. Equipment availability. Generally works best on petroleum contamination.

Soil Vapor Extraction –

Description: This process removes volatile organic compounds (VOCs) from soils which are *in situ* or have been excavated in large earthen piles (only to the groundwater table). The air stream process is used which injects air into the ground and transfers VOCs from the soil to the air. The air stream then removes the contaminants from the soil or water for further processing.

Comments: Moderate cost. Difficulty removing all VOCs. Sampling and monitoring costs. Collected contamination needs treatment or proper disposal.

Air Stripping –

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Description: A process used for remediation of groundwater contaminated with volatile organic compounds (VOCs) such as solvents. This process enhances the volatilization of compounds from water by passing air through the water to improve the transfer between the air and water gaseous/liquid phases. Water from the contaminated area is pumped in at the top of a packed tower as air is blown through the bottom. The volatile material then adheres to the surface of the plastic objects. Technology suited for lower concentrations of volatile organic compounds. Packed towers can be substituted by spray systems, tray towers, diffused aeration, or mechanical aeration.

Comments: High costs for engineering to specific design needs of property. Case-by-case project design and time assessment. Appropriate for petroleum products.

Pump and Treat –

Description: Pumping fluids into a containment area and collecting these fluids, along with contaminated groundwater, for future treatment. Wells are used for pumping and drainage tile collection systems or waste ponds are used for recovery of fluids. Water alone is usually used, but a variety of solvents can be added to the system that are specific to the contamination of the area. The solvents are used to bind with the contaminants for easier transport with water for off-site disposal.

Comments: High cost. Uncertainty of treatment duration. Systems must be monitored often.

Land Treatment/Land Farming –

Description: Land treatment involves applying uncontaminated soil to a contaminated area at a controlled rate and then mixing these soils within the subsurface area. This treatment method utilizes biological physical, and chemical processes that naturally degrade and immobilize contaminated wastes. Agricultural principles are used to hasten bacterial growth, among them nutrient addition, aeration, pH adjustments, and moisture control. Wastes removed may include organic materials (volatile and semi-volatile) and heavy metals. The latter is absorbed by soil particles.

Comments: Moderate cost. Costs for new soil. Sampling and monitoring costs.

Laser Separation –

Description: Decontamination strategy that separates chemical and radioactive contaminants from metals and surface sources. A pulsed laser beam precisely

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removes contaminated layer of metal while high-efficiency particulate air filters capture the removed particles and prevent them from resettling on the cleaned area.

Comments: Costs are extremely high. This is a future technology that is currently in the testing phase. Will improve safety, create less secondary waste and no hazardous chemicals, reduces costs of decontamination, and facilitates the reuse of valuable metals.

Incineration –

Description: Burning of substances on-site or off-site.

Comments: Unpopular with neighbors.

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ENVIRONMENTAL INSURANCE AND INDEMNIFICATION

Insurance and indemnification by outside parties, including governmental bodies, are generally substitutes that reduce the uncertainty concerning which party is absorbing the environmental risk in a brownfields deal. Neither insurance nor indemnification can assure the lender that debt service will be met, but they do offer protection against the borrower's (longer term) cash flow problems with respect to unexpected environmental contamination expenses. Also, state voluntary cleanup programs (VCPs) which offer a covenant not to sue (CNTS) absorb some of the future risk (subject to reopeners), by locking in regulatory statutes and procedures, assuring the other players that the rules of the brownfield game will not change. All this is subject to future US EPA policies.

Environmental remediation insurance is still in the early stages, with little actuarial data available for complex problems. There are only a handful of major carriers (Zurich-America, Reliance-ECS, Kemper Insurance, and AIG) that have or currently provide environmental insurance to brownfield properties. Other participants include reinsurers such as the Underwriters Reinsurance Group's URC Environmental Specialty group. Environmental insurance brokers, who work primarily for property redevelopers, are also active. Major brokers include ERIC, Neace Lukens (based in Columbus, Ohio) and Willis Carron, among others. These brokers search for the best products for the specific needs of the project from among the major insurance carriers. Insurance against environmental problems is more readily available for (underground storage tank) UST properties, through both public state insurance funds and private sources. However, in general, insurance for many other brownfield problems is often too expensive because it is only available for troubled properties. Also, the language, term, coverage, and cost are problematic with respect to project value and lender comfort. Finally, environmental insurance is not a substitute for loan guarantees. At least two forms of environmental insurance are available; stop-loss and pollution legal liability.

Stop Loss Insurance

One form of insurance is stop loss (also known as cost cap coverage), which operates like a major medical policy. The property owner agrees to pay for present or future remediation costs, up to a predetermined dollar amount, as per the remedial action plan. The insurance would take over after that up to the insured amount (typically double the remediation cost). Hence, the owner's loss is stopped at a certain point. The cost is substantial, but less than the comprehensive environmental risk policy described next. Stop loss insurance is usually taken during the site remediation phase. According to Steven M. DeCamp (Neace Lukens), lenders like stop loss because it helps eliminate fears of cost overruns that could render the developer incapable of finishing the project. Provided the developer has funds to cover costs up to the predetermined stop lost amount, the bank's concerns about loan default are minimized. The typical stop loss insurance cost ranges between three-six percent of the limits purchased, which are typically equal to the remediation amount, depending on the

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developer's participation. Overall, this insurance reflects less than one percent of total project cost.

Pollution Legal Liability

The other form of insurance is much more comprehensive and would protect the property owner (and presumably the cash flow which supports any debt service on the property) against future environmental problems. This insurance is typically taken in addition to cost cap coverage, either concurrent to it or after the clean up is completed. This type of insurance, referred to as pollution legal liability, usually requires environmental engineering research on a case-by-case basis, which can make it very expensive. Fortunately, if the owner has purchased cost cap insurance and already remediated the site, then these site investigation costs have already been allocated.

However, according to Susan Hollingshead (of Landbank in San Francisco, CA), the needs of the insurer, property owner, and lender diverge somewhat in the critical areas of coverage, language, term, and cost. Owners want coverage against unexpected contamination, whereas insurers generally only wish to cover what is already known. Insurers also want shorter terms to protect against long term changes in regulations and the potential for additional discovery of contamination, whereas lenders desire the insurance term to coincide with the length of the loan. The cost issue has been the main impediment, because insurance is pegged to environmental risks, not to real estate values. Thus, for many smaller deals with complex environmental problems there can be a real mismatch between insurance costs and value to the parties. In those cases, insurance may not be feasible. The cost for comprehensive environmental insurance can vary widely, from under \$10,000 for a several year term to \$250,000 or more for a longer term for a larger property. Multiple year policy discounts may make this more affordable. Pollution legal liability insurance represents an increase of several percent in the cost of the deal and a large increase in transaction expense. Also, this product pertains only to those brownfields deals where the risks can be quantified.

Although several of the equity players have indicated their dissatisfaction with available environmental insurance products and do not see them as a value at this point in the brownfields redevelopment process, the field is becoming more competitive, and prices are coming down substantially. Consider a \$5 million real estate deal with a \$4 million loan and \$1 million in clean up costs. In 1998, Steven DeCamp of Neace Lukens estimated that the typical cost for pollution legal liability coverage for a seven-year term, paid at inception, would be about \$100,000, or two percent of project costs. This figure is about 20 percent lower than it was in 1997. While this coverage is probably shorter than the loan term, it should cover virtually all lender concerns. Even coupled with stop loss coverage, brownfield remediation insurance should be available for about three percent of total project cost (or less) within one year.

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What is needed, according to Bank of America's (Chicago office) environmental service manager Randy Muller, is environmental insurance for a portfolio of loans. This would spread the risk around and keep the cost down to a reasonable level (i.e., under \$1,000 per loan) rather than the current expenses that can vary tremendously. This type of insurance product has recently become available.

Indemnification by Private Parties

Responsible parties have been forced, or in some cases have volunteered (e.g., Olin Corp. in New Haven, CT), to provide indemnification against future environmental problems. If the entity has deep pockets, this indemnification is very valuable to other parties in the brownfield deal because it is clear where the risk is being absorbed. Having a "shallow pocket" nonprofit corporation created to remediate a site and then kept alive to indemnify site owners and lenders against future actions does have some value in limiting their liability, but it does not necessarily assure that the problem will be fixed.

Government Bodies As Risk Reducers

This may be one of the trends of the future, where market failure can justify government intervention by absorbing some of the risks by indemnification parties against future environmental problems. This indemnifying is above and beyond direct prior property ownership and remediation responsibility. One good example of local government absorbing potential liability concerning future environmental problems is the municipal groundwater management zone approach being developed by Emeryville, California, although the financing mechanism has not yet been worked out. A more project-specific indemnification was offered by the community of Waterbury, Connecticut, which agreed to provide this assurance, funded by tax increment financing.

SECTION D: GETTING THE MONEY

REMEDIATION FUNDING

The remediation of a site separates the brownfield real estate project from the usual greenfield real estate project. In order to counter these larger costs, municipalities can offer developers special financing opportunities to “jump-start” development of environmentally tainted land. This SECTION highlights some of the financing mechanisms available to municipalities to supplement the traditional bank financing a “typical” real estate development project would receive.

Bank Loans

Description: Private lending institutions provide debt. Community Reinvestment Act (CRA) motivates participation in central cities.

Comments: Lenders are concerned with liability issues. Greater scrutiny of value of real estate collateral.

Community Development Block Grants (CDBG)

Description: Community Development Block Grants are city discretionary funds that are available for investigation and remediation of sites.

Comments: CDBG funds are generally for central cities, and must meet CDBG objectives of creating opportunities for low to moderate income persons, and reducing slum and blight conditions. May be administered by either loans or grants to end users.

Industrial Development Bonds

Description: Permanent financing at below-market rates.

Comments: Cap on funds means heavy competition for money in each state.

Local/In-Kind Grants

Description: Municipal land banks can donate lightly contaminated residential lots with clear title to brownfield projects for site assembly.

Comments: Land banks exist in several U.S. cities, but many communities own properties obtained through property tax foreclosure.

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Local Nonprofit Foundation

Description: Gap financing for real estate projects. Subordinated debt at favorable rates, linked deposits or other debt instruments.

Local Public Loan Pools

Description: Loan pool for community development, often allocated at the discretion of city community development department.

Comments: Restricted, but not available in all cities. Neighborhood Development Investment Fund in Cleveland, Ohio is an example, with \$40 million in the pool.

Philanthropic Foundations

Description: Some development-oriented foundations provide seed money for feasibility analysis and gap financing.

Comments: Neighborhood Progress Inc. in Cleveland, Ohio, does this, and has started strategic site assembly for industrial brownfields.

State Economic Development Authority

Description: Most states have below-market interest loans available for businesses. Brownfields are eligible, especially if jobs are created.

Comments: Quality of contaminated real estate as collateral is an issue.

State Housing Finance Authority

Description: For worthy residential brownfield projects, some state housing financing authorities will provide construction and permanent financing if low to moderate income guidelines are met.

Comments: Michigan and possibly other states are active in this arena.

State Revolving Loan Fund

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Description: The same as State Economic Development Authority, however, designated for brownfield projects.

State Site Assessment and Site Remediation Grants

Description: State grants for site assessment and site remediation.

Comments: A few states, including Michigan, have substantial grant funding pools. Pending in several other states. Funds may come from environmental agencies or through economic development agencies for industrial or commercial projects.

State Remediation Loans

Description: Below market interest rate loans for brownfield cleanup for sites in voluntary clean-up programs.

Comments: Several states have loan pools for brownfield remediation, and more are pending.

Tax Credit

Description: An amount subtracted from an entity's tax liability in ascertaining the entity's total tax liability.

Comments: Because a tax credit reduces an entity's tax liability dollar for dollar, rather than merely reducing its taxable income, a tax credit is more valuable than a tax deduction. Tax credits for brownfield redevelopment are offered in Ohio and Michigan.

Tax Abatement

Description: After remediation or improvements have taken place on a parcel, its value naturally increases, thus the assessed value of the land, building, fixtures, and other improvements will also increase, which translates into higher property taxes. Under a tax abatement program, property that has been improved will be exempt from property tax entirely, or that amount which is the result of the exempted improvements.

Comments: Tax abatement runs with the land, thus, if the property is sold the tax abatement remains intact. If, however, the conditions under which the abatement was granted are not maintained, the abatement may be revoked.

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Empowerment Zone Loans

Description: Section 108 EDI loan funds can be used for acquisition/development of brownfields. Loans are below market rates. Completed projects on brownfields may be eligible.

Comments: Only available in federally designated Empowerment Zones. Can also be used in conjunction with CDBG funds to reduce project debt or forgive principal. May also be available for permanent loans.

FINANCING BASICS

The importance of knowing the terminology of an industry has already been mentioned in SECTION B, titled “Real Estate Basics,” which dealt with real estate terms and concepts. The jargon of bank professionals can be equally challenging, and is perhaps even more critical to the completion of a redevelopment project. In the world of real estate development, developers are easily sold on an idea because they are generally optimistic thinkers who are willing to take a chance in order to earn a reasonable profit. Bankers are generally the more pessimistic operators, who critically analyze development projects because they do not want to make a loan that cannot be repaid. The analogy often used to describe this relationship is that the developer is the development engine while the banking industry is the brakes that slows the engine down. Just as SECTION B, titled “Real Estate Basics,” outlined the terminology of real estate practitioners, this section will outline the banking industry’s real estate financing jargon. Loan To Value ratio, Debt Service Coverage, leverage, foreclosure, and the types of risk are all terms and concepts used freely by bankers when negotiating loans. These terms must be fully understood if one expects to successfully understand the development process he or she is going through.

Loan-To-Value Ratio (LTV)

The loan-to-value ratio is the relationship between the market value of a property to be used as collateral for a loan and the amount a lender is willing to lend, abbreviated as LTV ratio. For example, an investor wants to purchase a property priced at \$1,000,000. A lender appraises the property and finds it to have an estimated market value of \$1,000,000, and agrees to make a 70 percent LTV loan. This translates to the lender providing 70 percent of the \$1,000,000 and the investor providing at least 30 percent in cash or other form of equity.

Debt Service Coverage (DSC)

The DSC indicates the ability of a project to service its debt obligation. It is used to evaluate the advantages of various financing packages and to assess one component

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of risk involved with the project. The higher the ratio, the less risk there is that the project will not be able to make its mortgage payments.

Generally, lenders look for a DSC of at least 1.25. This translates to the net operating income being at least 25 percent greater than the mortgage payments. A ratio of less than 1.0 would indicate that funds from a source outside of the project would be needed in order to meet its mortgage payments.

Leverage

Leverage is the ratio of debt (D) to equity (E), or $L=D/E$. Real estate investors benefit from leverage because it increases their rate of return (ROR) and, given the opportunity, an investor will continue to borrow until the cost of the loan, the interest rate, equals the rate of return. For example:

Assume an asset cost of \$4 million and an LTV of .8. Therefore the loan will be \$3.2 million, and the DSC .1, which is equal to debt service of \$320,000. (As shown in Table I1, the equity requirements for a leveraged property and rate of return is higher than without leverage.)

Table 17. Comparison of Rates of Return With and Without Leverage

	Without Leverage	With Leverage
TOT: REVS	\$1,000,000	\$1,000,000
TOT: EXP	-500,000	-500,000
NOI (Net Operating Income)	\$500,000	\$500,000
Debt Service	0	\$320,000
Before Tax Cash Flow	\$500,000	\$180,000
BTCF/Equity = ROR	\$500,000=12.5%	\$180,000=22.5%
	\$4,000,000	\$800,000
L=D/E	0=0	\$3,200,000=4.0
	\$4,000,000	\$800,000
E=	\$4,000,000	\$800,000

Table 18 shows a similar example of leverage and its effect on borrower return and lender risk (l.c.). Under the following assumptions:

- \$4 million price x .9 = \$3.6 million loan at .1 DSC = Debt Service of \$360,000.

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- \$4 million price x .8 = \$3.2 million loan at .1 DSC = Debt Service of \$320,000.

A borrower can obtain a still higher rate of return with even less equity when maximum leverage is applied. Therefore, a borrower would be motivated to borrow as much as possible, up to the point where the loan interest rate equals their rate of return.

Table 18. Effect of Leverage on Rate of Return (ROR)

	High Leverage	Moderate Leverage
NOI	\$450,000	\$450,000
Debt Service	-360,000	-320,000
BTCF	\$90,000	\$130,000
	\$90,000	\$130,000
BTCF/E	\$90,000	\$180,000
ROR	22.5%	16.3%
	\$400,000	\$800,000
L=D/E	\$3,600,600=9.0	\$3,200,000=4.0
E=	\$400,000	\$800,000
NOI/DS=DSC	1.25	1.4
LTV	.9	.8

Terms

Since leverage is implemented through mortgages, the following section describes different mortgage instruments. The following are various clauses commonly found in mortgage agreements.

Loan Guarantees

Insurance –

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Description: Some private insurance products are available to insure new buyers against known problems for a limited period of time.

Comments: Little actuarial evidence available. Terms are usually shorter than financing term. Not comprehensive and expensive, because it is not yet available for a portfolio of loans. See SECTION C, titled “Environmental Insurance and Indemnification.”

Delinquency –

Borrower late on debt service payments (1-2 months).

Default –

Borrower is out of compliance with terms of mortgage.

Technical Default –

Borrower is out of compliance with terms of mortgage other than payment of debt service. For example, failure to have insurance.

Substantive Default –

Borrower fails to continue making debt service payments.

Foreclosure –

The lender moves to recover assets by taking title or control of the real estate securing the mortgage. Usually, one lender will acquire title and the other (junior) lenders, if any, will be bought out or relinquish their claim.

Forms of Security Interest

Lien: A hold on the property’s title, preventing clear title until paid off. Any lien comes before the owner’s position at reversion (sale of property).

Property Tax Lien –

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If local property taxes are not paid, there is an automatic first position lien placed on the property. If property is sold, this lien is satisfied before all others, including the first mortgage.

- Mechanics Lien: Placed on property by a contractor who was not paid for work (labor and/or materials) done on the property.
- Federal Income Tax Lien: If the property's occupant has failed to make appropriate federal income tax payments, the IRS may place a Federal Tax Lien against the real property.
- Mortgage Lien: Lien where the property is encumbered to do financing on the property.

Types of Mortgage Instruments

- Fixed Rate Mortgage: Interest rate is fixed for the entire loan term.
- Adjustable Rate Mortgage (ARM): Interest rate is fixed for short periods during the loan term (1-3 years), then adjusts based on "spread" over some pre-selected financial instrument.
- Purchase Money Mortgage: (Owner will carry): Seller of property provides a first or second mortgage, providing gap financing. Usually implies a weak borrower.
- Wrap-Around Mortgage: Seller assists buyer with large junior financing, keeping an existing low interest rate mortgage on the property intact.
- Self-Amortizing Mortgage: When principle is paid off by the end of the loan term.
- Interest Only Mortgage: Borrower pays only interest, not self-amortizing.
- Loan Amortizing Schedule: Predetermined schedule by which mortgage debt service (comprised of principal and interest) are paid.

Loan Origination Points and Fees

- Points: Origination and/or discount points are a percentage of the original principal amount paid by the borrower for the privilege of originating the loan. A source of revenue for the lender.
- Fees: appraisal, title, miscellaneous items. Generally not a source of revenue for the lender.

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- Effective Interest Rate: Net interest rate paid by the borrower after including both nominal interest, points, and fees paid at loan origination.
- Balloon Payment: When a large principal amount is due some time prior to the end of the amortization period.

Components of the Mortgage Agreement

- Mortgagee: lender.
- Mortgagor: borrower.
- Mortgage Instrument: Recorded with the County Recorder.

Key Clauses in Mortgage

- Loan terms and payments
- Terms of mortgage compliance
- Loan prepayment without penalty
- Assumption/Assignment of mortgage
- Recourse/loan guarantee provisions
- Who “makes the lender whole” in case of default
- Recourse: if borrower defaults, s/he may be personally responsible for debt service.
- Non-recourse: only the real estate secures the lender’s position.
- Loan guarantee: agreement by borrower to repay the loan.
 - Individual: only the individual is personally responsible.
 - Severally: individual and (if corporate guarantor) firm both pledge to pay back loan.
- Collateral: real estate, borrower’s personal dwelling or other property specifically designated may be taken to repay loan if default occurs.
- Loan Subordination: when lender agrees to allow another lender to be paid back first in the event of default, i.e., the second mortgage is subordinated to the first mortgage. Hence, the second mortgage is junior to the first mortgage.

Multi-Source Financing Packages

See SECTION E, titled “Permanent Financing.”

Bankruptcy

A change in legal status of the borrower. Occurs when a firm or individual declares Chapter 7 (Liquidation), or Chapter 11 or 13 (Reorganization).

Risk

Risk, in the investment arena, is the exposure to potential financial loss due to the failure of a project or investment, or changes in conditions affecting the investment.

Types of Risk –

- **Business Risk:** The risk of loss due to changes in the economic conditions that affect the profitability of income-producing properties.
- **Liquidity Risk:** The risk of loss due to the absences of numerous real estate buyers and sellers. This could result in an investor being locked into an investment.
- **Inflation Risk:** The risk of loss due to rising inflation. If the income from an investment does not increase at such a rate as to allow it to keep pace with inflation, the result will be a reduction in the value of the property.
- **Management Risk:** The risk of loss due to lack of competency on the part of the management. If management is unable to conduct operations efficiently and effectively, maintain occupancy rates, and respond to competition to name a few, then the result will be a reduction in profitability and, perhaps, eventual failure of the project.
- **Interest Rate Risk:** On one hand, changes in interest rates, particularly in adjustable rate mortgages, can affect an investor's rate of return (i.e., as interest rates rise so do mortgage payments, thus the return on investment is reduced). On the other hand, even if an investor has a fixed interest rate, an increase in interest rates will reduce the amount a potential buyer is willing to pay for a property.
- **Legislative Risk:** Changes in laws and regulations can change the circumstances surrounding an investment, thus reducing the profitability of the investment, particularly in a highly regulated area such as real estate.
- **Environmental Risk:** The value of a property is adversely affected by the presence of environmental problems. If the environmental problems are not known to the investor prior to investment, the reduction in property value exposes the investor to substantial losses. Environmental risk is especially serious, because it can expose the investor to losses that exceed the value of the property if the investor is required to correct the problem.

SECTION E: LOCAL PUBLIC SECTOR TOOLS

USING ZONING AND EMINENT DOMAIN TO ASSEMBLE LAND

At times it may be necessary for a developer to acquire more than a single parcel of land before a project can start. This practice is known as site assembly. When assembling a site the developer is be faced with numerous obstacles, the two most difficult being zoning impediments and owners who do not wish to sell. Although these two obstacles may be difficult to overcome, they are not insurmountable.

Zoning

Zoning is the method by which local governments control the type of use to which a property can be put in order to protect the public health, safety, morals, and general welfare of its citizens. Generally, zoning laws divide land into zones (districts) and regulate the use for which a building may be erected, the number of occupants it may serve, and the size of the building. Zoning places properties into one of four categories, either residential, commercial, industrial/manufacturing, or agricultural. Within these categories there are several subcategories. Zoning can be used to assemble a property in one of several ways:

1. Rezoning or Amending. Rezoning or amending a zoning ordinance, whereby a property previously zoned for a particular use can be changed to another use (such as a change from commercial to industrial). An amendment can be initiated by a property owner in the area to be rezoned, or by the local government. Regardless, notice of the proposed rezoning must be given to all property owners in and around the area, and a public hearing must be held in order to allow the affected property owners and the general public to voice their concerns or objections to the rezoning.
2. Variance. A property owner may obtain a variance allowing deviation from the current zoning restrictions for a particular parcel. Variances are usually granted when undue hardship would result if the zoning ordinance were strictly enforced. The major limitation of a variance is that it may not alter the basic character of the area and must not be inconsistent with the legitimate objectives of the zoning ordinance. For example, a variance may be granted to an owner who wishes to have setback requirements reduced, allowing him to build on his parcel in a manner that best suits the property.

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3. Conditional Use Permit. A property owner may receive a conditional use permit allowing him to put his property to a use that does not comply with the present zoning. For example, a permit may be granted for a commercial enterprise, such as a grocery store, in an area zoned as residential. However, conditional use permits are usually very restrictive and may be revoked if the conditions of the permit are not explicitly followed. Therefore, continuing the above example, the permit would be revoked if the store were used to sell another type of product, such as clothing.

Eminent Domain

Another method of assembling a property is that of eminent domain, which is the power of the government (either federal or state) to take private property for public use. The limits of the power of eminent domain are set out in the Fifth Amendment to the U.S. Constitution, which provides: “[N]or shall private property be taken for public use without just compensation.”

Generally, when a certain parcel is identified by the government as being necessary for public use, the property owner is notified by an agent of the government body wanting to acquire ownership of the property. The agent will attempt to negotiate a mutually acceptable price for the property, and, if such a price is agreed upon, the property is purchased outright. If, however, the agent and the property owner can not arrive at a mutually agreeable price, then the power of eminent domain is invoked through a condemnation proceeding. The condemnation proceeding is a judicial proceeding whereby the government obtains title to the property, and the court decides upon the “just compensation” that the owner should receive.

In order for the government to take private property through its power of eminent domain, it must satisfy the two requirements outlined in the Fifth Amendment. First, the government body must be taking the property for “public use,” and second, it must provide the owner with “just compensation.”

What Constitutes A “Public Use?”

The takings clause of the Fifth Amendment prohibits the taking of private property for private use, even if the owner receives just compensation. Simply put, the government cannot take private property from one person and give it to another unless there is a public purpose. As a result, there is a great deal of litigation about what constitutes a “public use,” as opposed to a private use. The majority of this litigation has been in the area of urban renewal, where it is clear that the taking must be for a “public use” and therefore legal, even though the resulting renewal project is operated by private entities

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for a private use, and despite the fact that the building being condemned is not dilapidated (such as in *Blum v. Parker*, 348 U.S. 26 (1954)). The fact that there may be a “public use” even when private property taken from one person and given to another is expressly stated, as in *Poletown Neighborhood Council v. City of Detroit*, 304 N.W.2d 455 (Mich. 1981). In that case, the court found that the government could take private property from an owner and transfer that property to General Motors for an auto plant, even though the only public benefit would be a “bolstering of the economy.”

Determination of “Just Compensation”

The most often litigated issue in eminent domain proceedings is the determination of “just compensation.” The Fifth Amendment requires that “just compensation” be paid to the owner of the taken property. Although “just compensation” is an ambiguous term, the courts have generally held that the “fair market value” of the property at the time of the taking is the amount that must be paid. The fair market value of a property is based upon the “highest and best use” that can be made of the property under its current zoning restrictions. Therefore, if a vacant property were zoned for subdivision, then the fair market value of the property to a sub-divider is the amount that must be paid to the owner, even if the owner never contemplated subdividing the property.

In the brownfield area, determining the fair market value of a property may require a slum and blight study, which could take several years to complete. Therefore, often the threat of eminent domain is enough to get the property owner to the bargaining table.

The compensation paid to the owner cannot be measured as the “substitution cost” of the property. Suppose that the property owner has some unusual needs and that the replacement cost of the property is higher than the fair market value of the property. Under such a situation, the owner is only entitled to the fair market value of the property, not the higher “substitution cost” of the property (see: *United States v. 50 Acres of Land*, 469 U.S. 24 (1984)). The rule against “substitution cost” applies equally when the property being taken is that of a state or city and the entity has an obligation to replace a taken facility, such as a landfill. There is, however, an exception to the “substitution cost” rule in that the “substitution cost” may be used if the fair market value of the property is too difficult to ascertain, or where the use of the fair market value would “result in manifest injustice to the owner or public” (see: *United States v. 50 Acres of Land*, 469 U.S. 24 (1984)).

Permanent Financing

The benefits of financial leverage are common knowledge in the real estate world. The financing of a project is one of the most crucial aspects of the development, because without financing, the project most likely will not go forward. This section outlines some of the financing tools brownfield redevelopment projects have used in order to meet normal industry rates of return. The mechanisms go outside of the traditional “bank loan” because in addition to remediation costs, brownfield redevelopment projects are

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often located in areas subject to disinvestment, urban blight, high unemployment, and other consequences of inner-city industrial abandonment. The following pages list different types of per market financing sources available for brownfield projects which may be useful.

Brownfield Bank Tax Breaks

Description: Incentives for banks to loan cleanup working funds to small business, publicly owned, and orphan sites. Would provide loan interest tax credit directly to banks.

Comments: Unknown issues concerning lender liability.

Empowerment Zone (EmZ) Tax Breaks

Description: Employers in EmZ receive favorable tax treatment for hiring EmZ residents, such as faster equipment depreciation.

Federal Brownfield Tax Credits

Description: Enacted August 1997. Up to \$1.5 billion available.

Comments: Would be very useful if used in conjunction with other programs and if transferable to other parties. Too soon to tell how effective they are.

Industrial Development Bonds (IDB)

Description: Industrial development bonds are tax-exempt municipal revenue bonds used for site assessment and cleanup activities.

Comments: Limited public supply of funds due to specific project-created bond pools. Competes with other public uses for funds. \$50 per capita limit for all IDB or \$200 million state-wide.

Local Public Loan Funds

Description: Loan pool for community development funds distributes at the discretion of city community development office.

Comments: Restricted, not available in all cities.

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State Remediation Tax Credits

Description: 10-15 percent tax credit for eligible brownfield cleanup expenses up to \$750,000.

Comments: Recently enacted in Ohio. Only solvent firms with on-going projects can benefit in short term.

Tax Abatement

Description: After remediation or improvements have taken place on a parcel, its value naturally increases, thus the assessed value of the land, building, fixtures, and other improvements will also increase, translating into higher property taxes. Under a tax abatement program, property which has been improved will be exempt from property tax entirely, or that amount which is the result of the exempted improvements.

Comments: Tax abatement runs with the land, thus if the property is sold the tax abatement remains intact. If, however, the conditions under which the abatement was granted are not maintained, the abatement may be revoked.

Taxing Districts

Description: The district throughout which a particular tax or assessment is ratably apportioned and levied upon the inhabitants; it may comprise the whole state, one county, a city, a ward, or part of a street (Black's 1990).

Tax Increment Financing (TIF)

Description: A local government initiative, TIF provides a funding stream to pay back bonds used to fund cleanup costs. Additional property taxes are dedicated to repayment of municipal revenue bonds.

Comments: Used for brownfields in Connecticut. Cannot be used with property tax abatement.

Tax Credit

Description: An amount subtracted from an entity's tax liability in ascertaining the entity's total tax liability.

Comments: Because a tax credit reduces an entity's tax liability dollar for dollar, rather than merely reducing its taxable income, a tax credit is more valuable than a tax deduction. Tax credits for brownfield redevelopment are offered in Ohio and Michigan.

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ANALYSIS OF PUBLIC SUBSIDY

Public subsidy for brownfields should be conducted using fiscal and economic impact analysis. Fiscal impact should include all public subsidies (land, tax abatement, subsidized mortgages, etc.) as costs, and all on-budget tax collections resulting from the project as benefits (sales tax, property tax, income tax, etc.). The analysis should be carried out over a long (20-30 year) period, using discounted cash flow analysis. Ideally, the present value (PV) of benefits should outweigh the PV of costs, but just calculating the benefit/cost (B/C) ratio is advantageous in minimizing excess subsidies. The following case study illustrates this type of analysis.

Brownfield Estates Housing Development

This is an example of a residential 26-unit housing development in the City of Cleveland. The development site was traditionally a residential area, and the developer wanted to market the units to empty nesters and young professionals. The six-acre site contained several lots with units had been demolished and “buried” in the former homes’ basements. These residential brownfields and the general economic condition of the neighborhood justified government intervention in the project.

Table 19 analyzes the fiscal (on-budget) costs and benefits of the project to the City of Cleveland. The costs include the costs of the land bank lots to the city, environmental remediation grants, demolition and relocation of two existing residences, first mortgage subsidies for qualified buyers, and property tax abatement. Benefits to the city include increases in the property taxes of the site, income tax from new residents, income tax from the project’s construction workers, and increases in neighboring property taxes attributed to the development.

The analysis shows that the city nearly broke even over the ten-year “subsidy” period. The return on every city dollar invested was \$0.91, which translates to a benefit/cost ratio of 1:1.1. However, if this analysis were carried out over fifteen or twenty years, the benefits may actually be greater than the costs. On the next page, Table 19 gives an example of discounted cost/benefit fiscal impact analysis.

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Table 19. Benefit/Cost Analysis for Brownfield Estates

Assumptions										
City Discount Rate	5.50%									
Household Income (40% of sale)	\$76,000	Traffic Impacts		(0.5 - 2%)						
Construction Income Tax per Unit	\$950	Average Indirect Property Value Increase		6.105%						
Average Sale Price	\$190,000	Adjacent to Property		11%						
Land Value	\$38,000	Across from Front of Development		6%						
Structure Value	\$152,000	Across from Side or Rear of Development		4%						
Number of Units	26	Diagonal from Development		3%						
Annual Property Value Increase	1.50%	Average Neighboring Property Value		\$100,000						
Annual Income Increase	2%									
City Income Tax	2%									
City Mill Rate	4.40									
Assessment Rate	0.35									
Unimproved Value	\$250,000	\$253,750	\$257,556	\$261,420	\$265,341	\$269,321	\$273,361	\$277,461	\$281,623	\$285,847
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Characteristics of Area										
Household Income	\$76,000	\$77,520	\$79,070	\$80,652	\$82,265	\$83,910	\$85,588	\$87,300	\$89,046	\$90,827
Property Market Value	\$190,000	\$192,850	\$195,743	\$198,679	\$201,659	\$204,684	\$207,754	\$210,871	\$214,034	\$217,244
Assessed Value	\$66,500	\$67,498	\$68,510	\$69,538	\$70,581	\$71,639	\$72,714	\$73,805	\$74,912	\$76,035
Land	\$13,300	\$13,500	\$13,702	\$13,908	\$14,116	\$14,328	\$14,543	\$14,761	\$14,982	\$15,207
Structure	\$53,200	\$53,998	\$54,808	\$55,630	\$56,465	\$57,312	\$58,171	\$59,044	\$59,929	\$60,828
Benefits										
Direct Property Tax	\$1,137	\$1,154	\$1,171	\$1,188	\$1,206	\$1,224	\$1,243	\$1,261	\$1,280	\$1,299
Income Tax	\$39,520	\$40,310	\$41,117	\$41,939	\$42,778	\$43,633	\$44,506	\$45,396	\$46,304	\$47,230
Construction Income Tax	\$24,700	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Neighborhood Property Tax	\$9,402	\$9,543	\$9,686	\$9,831	\$9,979	\$10,128	\$10,280	\$10,434	\$10,591	\$10,750
Total Benefits per Year	\$74,758	\$51,007	\$51,973	\$52,959	\$53,963	\$54,986	\$56,029	\$57,092	\$58,175	\$59,279
Discount Factor	0.9479	0.8985	0.8516	0.8072	0.7651	0.7252	0.6874	0.6516	0.6176	0.5854
Present Value per Year	\$70,861	\$45,827	\$44,261	\$42,749	\$41,289	\$39,878	\$38,516	\$37,201	\$35,931	\$34,704
Total Benefits in Present Dollars	\$431,217									
	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Year 7	Year 8	Year 9	Year 10
Costs										
Land Bank	\$75,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Infrastructure	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Environmental	\$200,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Demolition/Relocation	\$40,000	\$40,000	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
First Mortgage	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000	\$12,000
Second Mortgage	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0	\$0
Tax Abatement	\$6,086	\$6,177	\$6,270	\$6,364	\$6,460	\$6,556	\$6,655	\$6,755	\$6,856	\$6,959
Total Expenses per Year	\$333,086	\$58,177	\$18,270	\$18,364	\$18,460	\$18,556	\$18,655	\$18,755	\$18,856	\$18,959
Discount Factor	0.9479	0.8985	0.8516	0.8072	0.7651	0.7252	0.6874	0.6516	0.6176	0.5854
Present Value per Year	\$315,721	\$52,270	\$15,559	\$14,824	\$14,124	\$13,458	\$12,824	\$12,220	\$11,646	\$11,099
Total Costs in Present Dollars	\$473,745									
City's Return per Dollar Invested		\$0.91								
Benefit/Cost Ratio		1 : 1.1								

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U.S. EPA's Brownfield Home Page
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EPA's Region V Home Page
<http://www.epa.gov/R5brownfields/>

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Illinois EPA Brownfields Website
<http://www.epa.state.il.us/land/site-remediation/>

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Ohio EPA
www.epa.ohio.gov/oepa.html

Ohio Voluntary Action Program
www.epa.ohio.gov/derr/volunt.html

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(608) 267-6713
E-mail: fossd@dnr.state.wi.us

Wisconsin Brownfields Website
<http://www.dnr.state.wi.us/org/aw/rr>

Other Resources:

Department of Energy
Office of Environmental Management
Documenting Cost and Performance for Environmental Remediation Projects
<http://www.em.doe.gov/costperf/index.html>

RS Means
ECHOS: Environmental Cost Handling Options and Solutions
Environmental Restoration: Assemblies Cost Book
<http://www.remeans.com>

Coming Clean for Economic Development: A Resource Book on Environmental Cleanup and Economic Development Opportunities. Charles Bartsch, Elizabeth Collaton, Edith Pepper. <http://www.nemw.org/cmclean.htm#contents>

Turning Brownfields in Greenbacks: Financing and Redeveloping Contaminated Urban Real Estate. Robert A. Simons. Washington, DC. Urban Land Institute 1998.
<http://www.UL1.org>

SECTION F: THREE CASES OF BROWNFIELD REDEVELOPMENT

—By—
Kirstin S. Toth

CASE STUDY I— WARNERS' STELLIAN, ST. PAUL, MINNESOTA

Background

The St. Paul Port Authority operates under a unique mission as a municipal corporation created under state law, but is funded by both public and private dollars, including a self-generated fee income. Its Board of Commissioners is comprised of seven members serving for six years, five of whom are private business leaders (many of whom are specialists in credit assessment and underwriting). This expertise provides a focus for the Port Authority that is private-sector driven and customer-oriented, unlike many public development organizations that have to contend with, at times, overwhelming political motivations in pursuing economically viable development and redevelopment. The Port Authority is *the* industrial development organization for the city of St. Paul and focuses on job creation within the city's various industrial parks, most of which were created by the Port Authority over the last thirty years. They offer administrative expertise in development and redevelopment, aggressive marketing of St. Paul light industrial land, and job training via a recently created customized job training curriculum offered to companies as an additional incentive to seek workers from the economically disadvantaged neighborhoods where most redevelopment occurs.

Working closely with the Minnesota Pollution Control Agency, the Port Authority typically takes ownership of abandoned or blighted property, assesses remediation needs, and performs the actual clean-up, which includes significant time and effort in environmental Phase I and Phase II site due diligence. The property is then sold to a viable manufacturing business for \$1 in exchange for a development commitment. This development commitment requires that 60 percent of new hires come from the surrounding St. Paul neighborhoods, that there be at least one job per 1,000 square feet of building space, that the building cover at least 30 percent of the parcel, and that the owner spend at least \$30 per square foot in construction value. The Port Authority will provide financing to bring a prospective manufacturer up to a maximum of 90 percent loan-to-value, filling in the typical gap from private banks' maximum loan-to-value of 70 percent. This underwriting ability, coupled with the Port Authority's access to city, state, and federal development funds, provides the 25-member staff, almost all of whom came from private sector financial or development backgrounds, with excellent resources to aggressively market redevelopment of brownfield sites in the City of St. Paul. The following project demonstrates their unique ability.

Project Description

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Warners' Stellian, a retailer of household appliances including refrigerators, freezers, and stoves, was seeking a location to build a new corporate headquarters and distribution facility. Within one year, the company built its new headquarters, and held its grand opening celebration in July 1996.

The Port Authority had a partially remediated industrial park in a residential neighborhood called the Rice Street Industrial Park. The Port Authority was aggressively seeking owners who would complete the development of the two parcels comprising this six-acre brownfield site. Warners' Stellian eventually gained control of 4.1 acres of this land.

Structure of the Deal

The Rice Street Industrial Park was purchased by the Port Authority and cleaned three years ago under a now-defunct program entitled the Urban Revitalization Action Program (URAP). Created by St. Paul and Minneapolis, URAP was designed for neighborhood revitalization in Minnesota's major urban centers. Under that program, the Port Authority pumped \$1.1 million into the site for the initial purchase, clearing, and cleaning of the property to prepare it for redevelopment. The City of St. Paul also contributed \$200,000 from their Economic Development Initiative for site remediation. Warners' then bought the property for \$1 from the Port Authority in return for a commitment to spend \$125,000 for soil compaction in addition to the above mentioned standard development commitments. The Port Authority provided an additional \$135,000 to cover remaining soil correction. The budget that follows outlines these commitments:

Table 20. Warners' Stellian Project Budget

Uses of Funds:	
Land Acquisition, initial remediation	\$1,300,000
Soil remediation	260,000
Building development	1,500,000
	\$3,060,000
Sources of funds:	
State URAP TIF via Port Authority	\$1,100,000
City of St. Paul Economic Initiative Funds	200,000
Port Authority Development Fund (loan)	135,000*
Warners' contribution to soil remediation	125,000

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Warners' building development

1,000,000

\$3,060,000

*Loan to be repaid with interest from the tax increment generated from the project over four years.

Lessons Learned

Warners' Stelian built a 29,550 square foot building on 162,000 of the buildable square feet of the parcel, and has plans to expand with an additional 25,000 square feet in the future. The immediate impact of this project was the creation of 15 new jobs with the expectation of creating another 15 jobs as the company grows. Warners' is committed to requiring that 60 percent of new jobs go to St. Paul community residents, and they have indicated a willingness to participate in the Port Authority's customized job training program, the Employment Connection. The city's tax base is expected to increase by \$50,000 per year, with the tax increment district having its share fulfilled by the year 2013.

This project is an example of how a small parcel can be carved out of a centrally located blighted area and aggressively redeveloped by a redevelopment organization. Warners' responded to the Port Authority because of financial and other incentives and the willingness of the Port Authority to work with them. For example, initial building size requirements were eased in the expectation that future company growth would complete the required building-to-land ratio of 25 percent.

Financing for this project was a cooperative arrangement between the Port Authority, the city, and American Bank (in that they accepted a second tax increment payback position to the Port Authority for four years) in order to redevelop the site with a stable, proven, successful company.

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—By—
A. J. Magner

CASE STUDY II—THE JERGENS/COLLINWOOD YARDS REDEVELOPMENT, CLEVELAND, OH

The former Collinwood Yards site, which was abandoned in 1980, is a prime industrial location. Railroad companies formerly owned the site, the most recent being Conrail, which sold the property in 1982 to Arthur Bates. In 1995, Bates sold the site to Michael E. Osborne, a local developer. Redevelopment of the site has included extensive environmental cleanup and demolition of 250,000 square feet of building space, including obsolete multi-story industrial buildings and a powerhouse.

The site was among the City of Cleveland's Economic Development Department's six priority sites for job and business creation. Jergens Inc., a machinery maker located in the Collinwood community, will be a prime occupant of the site. Due to the scarcity of clean land available in the city for industrial development, Jergens was suffering from a lack of space in its current location. If the Collinwood Yards site had not been developed, Jergens and its 150 jobs would have had to move out of the city to a suburban site.

This case study will center on the development issues that faced the Collinwood Yards site, and the financing of the 13-acre Jergens site. The focus will remain on the development issues presented to the city and executives of Jergens, but will maintain a view of what was and is happening to the entire 47-acre Collinwood Yards development. It is impossible to analyze the development of the two projects separately because, without one, the other may not have been possible. Jergens gave Osborne the security of having a major occupant for the site, while Osborne provided the experience and expertise necessary for the development of a project with complex issues like those of Collinwood Yards.

Location of Site

Collinwood Yards is located just south of Interstate 90 and Waterloo Road and to the west of East 152nd Street. It is located about seven miles from downtown Cleveland, near Lake Erie. It consists of 47 acres of land with high visibility and accessibility to Interstate 90.

History and Past Uses

The 47-acre Collinwood Yards site (the site) is located on the southeast corner of Interstate 90 and East 152nd Street. Until 1980 when Conrail closed it, the site had been an active transportation hub and industrial site since the 1870's. After Conrail

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Railroad closed its repair facility on the site in 1980, it sold the site to Bates in 1982, and no longer occupied the site. Conrail continues to operate a small switching and containerization facility near the site, and CSX has shown interest in operating a new intermodal transfer facility in the new Collinwood Yards Industrial Park.

The site's history is a key to the lack of interest in its redevelopment. Over its more than one hundred years of operation, the site has seen an extraordinary number of uses, most of which were as industrial facilities. Some of the facilities that have been known to exist on the site are:

- Sewerage Disposal Plant (1900-1912?)
- Locomotive Repair Shop (1900-1980)
- Blacksmith Shop-including brass foundry, hammer shop, bolt shop, spring shop, machine shop, and paint shop (1900-1980)
- Passenger Car Painting Shop (1900-1980)
- Passenger Car Repair Shop (1900-1980)
- Freight Car Repair Shop (1900-1980)
- Upholstering Shop (1900-1980)
- Wood Planing Mill (1900-1980)
- Coal Bins (1900-1980)
- Power House (1900-1998)
- Oil/Water Separator (1900-1998)
- Laboratory (1912-1960)
- Varnish Removing Area (1912-1980)
- Oil and Paint Area (1912-1980)
- Machine Shops (1912-1980)
- Offices (1900-1998)
- Waste and Oil Reclaiming Area (1926-1960)
- Acetylene Plant (1926-1980)
- Oil Platform (1926-1980)
- Vapor Degreaser Pits (1952-1980)
- Above Ground Storage Tanks (Dates Vary)
- Underground Storage Tanks (Dates Vary)
- Transformer Pads (Dates Vary)

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These and other unknown uses have contributed to the major barrier of redevelopment for the site. The site is essentially a “viable brownfield,” which is defined as “an under-utilized property with actual or perceived environmental liabilities that, due to its inherently positive market attributes, can be economically redeveloped into productive assets.”

Market Study

The location, accessibility, and visibility of the site make it an ideal location for industrial development. According to the Urban Land Institute’s Collinwood Advisory Services Panel Report, Cleveland’s industrial real estate market has been expanding. About 10.5 million square feet of new space has been constructed over a three-year period, and the vacancy rate is eight percent. However, new construction is primarily in suburban areas. The trend does not directly relate to expanding employment, but indicates a higher requirement of space per employee in the market.

Despite the unprecedented, older industrial areas are not capturing the demand for more space from these firms, due to the rapid technological advances made in the past fifteen years. In fact, older industrial areas in the region are experiencing a net reduction in their share of the metropolitan area’s industrial real estate market. The reason for the lack of activity in the city is that the industrial buildings are old and design to accommodate now out-of-date manufacturing and warehousing processes. The city’s building stock appeals to a continually shrinking market.

The ULI reports that there is a market for new “General Purpose” and “Build to Suit” industrial space in the city. However, due to the lack of space built to suburban industrial park standards, there is no market reference point from which to estimate demand. While it is good to know that a possible pent-up demand exists, the dimensions of the market may not be of critical importance since the analysis of the Jergens project is actually a “Build to Suit” project with a tenant ready to move in.

Closure Letters

In order to reduce the risk of liability due to environmental contamination, the Collinwood Yards site had to go through the Ohio Environmental Protection Agency’s (OEPA) Voluntary Action Program (VAP). Additionally, the site had to be designated as an “Urban Setting” with the OEPA in order to reduce the extremely high cost of remediation.

Groundwater contamination is one of the most expensive forms of land pollution to remediate, and the Collinwood Yards site had its share of groundwater contamination. The most cost-effective solution to this problem is an Urban Settings Designation. The Urban Setting Designation, also issued by OEPA, essentially says that the site and the surrounding properties get drinking water from sources other than wells. This designation imposes less stringent guidelines of groundwater contamination. While the

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designation greatly reduces the cost to the development team, the project planners have to give consideration to problems that could arise from personal contact with groundwater or contaminated vapor emission. The Collinwood site is only the second in Cleveland to receive the two-year-old designation. Remediation costs were approximately \$2 million.

Demolition

All of the buildings on the Collinwood Yards site were in a state of disrepair, and the city had condemned three of the five. Osborne was required to demolish and remove the debris from these buildings and some concrete foundations from previously demolished buildings. The cost of demolition was approximately \$700,000.

Controlling the Site and Site Assembly

Property Options

Glenn Properties (Jergens, Inc.) has an option on the 13-acre Jergens site pending the receipt of the “covenant not to sue.” As of mid-1998, the work crew and materials had been ordered and construction schedules to begin when the CNTS is issued and Glenn Properties takes title.

City Role

The city helped organize the project through its regulatory actions while the site was still under the control of Bates. One has to wonder if it was coincidental that the city performed these inspections of the property just as a deal was about to be finalized between Jergens and Bates. The city may have planned to condemn those buildings before the deal was struck, therefore forcing Bates to sell the land to Osborne and allowing the entire site to be developed at once, instead of only a ten-acre portion. Another reason for the sudden interest in building code violations on the Collinwood site may have been rooted in the city’s dissatisfaction with Bates’ speculation on the site for so long. Whether it was a coincidence or one of the aforementioned strategies, the city is better off with a 47-acre development, as opposed to a ten-acre development surrounded by a 37-acre brownfield.

Rezoning

No rezoning was required for the project. The land had previously been zoned for industrial use, which fit its historical uses. Therefore, the zoning did not have to be changed during the redevelopment process.

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Remediating the Site

Osborne's Collinwood Properties hired Hemisphere Corporation (Cleveland, Ohio; <http://www.hemispherecorp.com>) as an environmental consultant to help work through the remediation process. As the coordinator of all the environmental work, Hemisphere's responsibilities included, but were not limited to, negotiating regulatory issues with state officials, securing low-interest public financing, orchestrating environmental insurance coverage, coordinating public relations, and directing the project through the urban settings designation process in record time.

The Jergens portion of the Collinwood Yards site purchased by Jergens, Inc. for its new facility had levels of contaminants that were evaluated in the context of a risk assessment. This risk assessment required the developer to restrict the property to only commercial or industrial uses and precludes future use of any on-site groundwater for potable purposes. However, this assessment does not require any particular special building design requirements.

The Jergens portion of the site had very few contaminants removed from the site, instead, risk assessment was largely employed. However, a great deal of demolition debris was removed from the site. Collinwood Properties benefited greatly from having the opportunity to classify the demolition and removal of rubbish considered. The site has been remediated and the State of Ohio has issued the Covenant Not to Sue to Jergens. No further monitoring is required of Jergens.

Sweetening the Deal with Public Funds/ Permanent Financing

The project subsidies for this project can be confusing because there are actually three entities that received subsidies from the city, state, and Port Authority: Osborne's Collinwood Properties, LLC; Jergens' Glenn Properties, LLC; and Jergens, Inc. were all recipients of subsidized loans or grants from the aforementioned government agencies.

Collinwood Properties, LLC

Osborne's development company received remediation grants of \$1 million from both the City of Cleveland and the State of Ohio. Collinwood Properties has \$1.3 million dollars in equity in the project, but it also received \$1 million from the State 442 Grant, which is part of a VAP.

The \$1 million from the City came from an Economic Development grant. Table 21 gives specific financing and uses information. The \$1 million from the state came through the Urban and Rural Initiative State 442 Grant Program. The program is designed to help distressed areas, labor surplus areas, and/or situational distressed areas. Collinwood qualified under the labor surplus criteria and as part of a Voluntary

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Action Program. The City of Cleveland actually received the grant, but all funds went to the clean up efforts at Collinwood Yards, via Collinwood Properties.

Table 21. Sources and Uses of Funds for Collinwood Properties

Line Item Activity	D.E.D.	442 Grant	Developer Equity	Total
Predevelopment				
Land and Building			\$1,300,000	\$1,300,000
Site Improvements & Utilities	\$50,000			\$50,000
Demolition and Clearance	\$550,000			\$550,000
Environmental Remediation		\$900,000		<u>\$900,000</u>
TOTAL PREDEVELOPMENT COSTS				\$2,800,000
Soft Costs				
Agricultural/Engineering	\$25,000			\$25,000
Legal and Accounting Fees	\$100,000			\$100,000
Consultants Phase II	\$150,000	\$100,000		<u>\$250,000</u>
TOTAL SOFT COSTS				\$375,000
Hard Costs				
Construction Costs				
Construction & Renovation	\$50,000			\$50,000
Capital Equipment	\$37,500			\$37,500
Non-Capital Equipment	\$37,500			\$37,500
TOTAL HARD COSTS				\$125,000
GRAND TOTAL	\$1,000,000	\$1,000,000	\$1,300,000	\$3,300,000

Jergens, Inc. and Glenn Properties

(For the purposes of this analysis, Jergens and Glenn Properties will be considered one entity.)

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The City of Cleveland, State of Ohio, and the Cleveland-Cuyahoga County Port Authority provided financing for the construction of the Jergens 90,000-square-foot manufacturing facility. These sources also provided financing for the purchase of new equipment and machinery for the facility (see Table 22).

The City of Cleveland provided the project with \$1 million in financing. Two loans from the Neighborhood Development Investment Fund (NDIF) were granted to Jergens, Inc. The first loan, in the amount of \$700,000, has a term of 25 years with an annual percentage rate of two percent. The second NDIF loan, an interest-free loan, was granted in the amount of \$300,000 over a 10-year period. The city has a secondary mortgage position on both of these loans.

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Table 22. Sources and Uses of Funds for Jergens Project

Line Item Activity	N.D.I.F.	166 Loan	Port Authority	Accrued Interest	Jergens' Equity	Bond Reserve	Total
Predevelopment							
Land Acquisition			\$479,340		\$220,660		\$700,000
Site Improvements & Utilities							<u>\$0</u>
TOTAL PREDEVELOPMENT COSTS							\$700,000
Soft Costs							
Agricultural/Engineering	\$297,386						\$297,386
Legal and Accounting Fees	\$70,170		\$182,329				\$252,499
Closing/Financial Costs	\$377,264		\$19,000				\$396,264
Moving Costs	\$200,000						\$200,000
Cost of Port Bond Issuance			\$106,000		\$2,185		\$108,185
State Loan Issuance Expense		\$20,000					\$20,000
Bond Reserve						\$572,000	\$572,000
Capitalized Interest Fund			\$241,500	\$21,350			\$262,850
Project Contingency					\$93,000		<u>\$93,000</u>
TOTAL SOFT COSTS							\$2,202,184
Hard Costs							
Construction Costs			\$982,027				\$982,027
Construction Costs-Manufacturing			\$1,993,813				\$1,993,813
Machinery & Equipment	\$55,180	\$980,000	\$1,880,665		\$284,155		<u>\$3,200,000</u>
TOTAL HARD COSTS							\$6,175,840
GRAND TOTAL	\$1,000,000	\$1,000,000	\$5,884,674	\$21,350	\$600,000	\$572,000	\$9,078,024

The State of Ohio also provided financing to Jergens. The state granted a 166 Loan to Jergens for \$1,000,000 at an interest rate of 2.25 percent over 20 years. The state shares a first mortgage position with the Cleveland-Cuyahoga County Port Authority (CCCPA).

The Port Authority gave Jergens a loan for \$5,720,000 with a 20-year term. The loan is based on CCCPA's bond fund bonds. The loan has an interest rate of 5.68 percent and has a first position. The Port also requires a 10 percent (\$572,000) debt service reserve deposit. The Port's loan is the largest source for the project. It accounted for approximately two-thirds of the project costs.

Jergens received \$7.72 million in loans for the project. All of the loans came from government agencies and all were financed at below-market interest rates. If one considers the time value of money, the project had a total financial subsidy of \$4.80

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million including the tax credits, abatements, and subsidized financing discussed earlier. This does not include the possible Free Trade Zone subsidies.

Other Subsidies

Other subsidies given to Jergens for this project have been discussed earlier in the Development Team section of this paper. Subsidies include 10-year tax abatement on both real and personal property, State of Ohio Investment Tax Credit, Job Creation Tax Credit from the State, and a possible Free Trade Zone, pending approval from the Port Authority.

Analyzing the Subsidy: Benefit/Cost Analysis

Sale of Site

As mentioned in an earlier section, the original plan for the development of the site was for Jergens to purchase 10 acres of the site from Arthur Bates for the construction of a new production facility. However, after the condemnation of several buildings on the site, Bates was forced to sell the entire 47-acre site to Osborne's Collinwood Properties. Osborne's group immediately notified Jergens of their acquisition of the property. Jergens and Osborne then worked out a deal for the development of a 13-acre production facility for the manufacturer. Jergens then optioned the property for sale, pending the site completion of the Ohio EPA's VAP. As of early 1998, the option has been exercised, and construction of Jergens' facility has begun.

Lessons Learned

The first lesson to be learned from the Jergens development project is that one should try to qualify for multiple subsidies. Jergens had job creation requirements for the city and state loans, but the requirements did not say that the jobs could not be counted for both subsidies. The jobs created by the expansion applied met the requirements for both the state income tax credits and the city's subsidized loan.

Another lesson one could take away from this project is to always count on delays. Jergens lost one year because of the initial sale of the land to Osborne; it is now losing time due to the late arrival of the CNTS. The amount of time it takes to put together a deal of this size should not be underestimated.

An additional lesson one can take from this development is that not only the time involved, but the timing of a project is very important. The project began to develop just after major environmental liability release legislation had been passed. The Voluntary Action Program and the Urban Settings Designation are both relatively new tools available to developers. These programs significantly decrease the cost of remediation,

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and made the project's rate of return viable. If not for these designations, the site might still be vacant.

The final lesson one can take from this project is that the importance of the primary tenant cannot be understated for a project such as Collinwood Yards. Osborne was able to make confident moves during the development because he knew that, when the remediation was completed, he would have cash flow. Osborne sold the 13-acre site to Jergens for approximately \$700,000, but only paid about \$1.3 million for the whole site. That means the other 37 acres of the site only cost him approximately \$600,000, less the time value of his investment.

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CASE STUDY III— HELEN ODEAN BUTLER APARTMENTS, DETROIT, MI

Project Background

The Helen Odean Butler Apartments is a 133-unit low to moderate income housing complex in the Elmwood Park neighborhood of Detroit, Michigan. It is located about five minutes from downtown and half a mile from the river, just adjacent to the Detroit Empowerment Zone. Vital Investments Serving in Our Neighborhoods, Inc. (V.I.S.I.O.N.S.), a not-for-profit, church-based organization is the developer and management entity. The apartment complex is heavily subsidized by the Michigan State Housing Development Authority because it is entirely committed to low and moderate income families (those earning 30-60 percent of the area's gross annual income).

The majority of the site was formerly an urban renewal site from the 1960's. It was owned by the City of Detroit, and for a long time was passed over for development because of perceived contamination. The site was formerly residential, with about 50 houses and a dry cleaning establishment on it.

Market Study

Data gathered from the city-county data book confirm the deteriorating local economic conditions in the city. Manufacturing firms have dwindled by nearly 63 percent from 1963 to 1987 (from 3,370 to 1,255), and the number of persons employed by those firms during this period was down by almost 50 percent (from 200,600 to 102,200). Retail growth has been negative, with a 62 percent reduction of establishments with payroll from 10,300 in 1963 to 3,847 in 1987.

This contraction in the commercial area has been matched by a decrease in the city's population. The 1992 population of one million was down 15.9 percent from 1980. The population is 80 percent minority. The median age is 30.8 years, about two years younger than the state average.

With full occupancy and a waiting list of 500, this project has been accepted in the market. Contamination left on the site from previous use has not negatively affected marketing.

Preliminary Remediation/Financing Plan

There had been two previous attempts to put a preliminary redevelopment plan together for the site, but both failed before the plans could be implemented. The site was historically predominately residential, but a dry cleaner was located on it on one point. In addition to the dry cleaner's contamination, the site was covered with a thin layer of lead from leaded gasoline automobile emissions. The City of Detroit paid \$100,000 of the remediation cost, and the developer paid \$66,000 for debris removal, thus the total

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cost of remediation was fairly inexpensive at \$166,000. If the \$50,000 in environmental consulting fees are included in the remediation expenses, then the total expense works out to \$0.58 per land-square-foot.

Controlling the Site and Site Assembly

Site assembly was one of the easier tasks for this project. The site was owned by the City of Detroit, which was willing to turn over the site to V.I.S.I.O.N.S. for the proposed use.

Remediating the Site

The contamination on the site consisted primarily of lead, presumably from lead paint and vehicle travel, with traces of arsenic. About two acres of the surface soils had hot spots above acceptable limits. These contaminated soils were removed to a landfill. The rest of the site had acceptably low levels of contamination.

Design and Liability Reducing Strategies

The project was designed to safeguard the occupants from residual contamination by providing a limited number of pathways where occupants would have prolonged exposure. Specifically, the site plan located buildings away from residual contamination and placed land buffers between hot spots of contamination and buildings. Also, the site design called for slab construction, eliminating basements, and further reducing the possibility of contact.

Sweetening the Deal with Public Funds

The City of Detroit provided the project with \$100,000. In addition, the Michigan State Housing Development Authority (MSHDA) provided the project with a highly subsidized public loan at one percent interest. This correlates into a total interest expense over the life of the loan of approximately \$926,000, with an annual debt service of \$220,000. By way of comparison, a loan at a market rate of eight percent interest would cost approximately \$9,489,000 over the life of the loan, with an annual debt service of \$506,000. With a project NOI of \$285,000, the project would be unworkable with a market rate loan.

Analyzing the Subsidy: Benefit/Cost Analysis

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The project has a small amount of local funding. Permanent financing was provided by the state. The project has federal low-income housing credits. The property pays local property taxes; however, its fiscal returns do not justify the large public investment. The benefits from this project are largely social, by providing dignified and stable housing for the working poor in the City of Detroit, as well as stabilizing the neighborhood.

Permanent Financing

MSHDA provided the project's permanent financing with a 30-year loan at a subsidized one percent interest. The loan requires that the property be used for low to moderate income rents for the entire loan term, and it prohibits prepayment of the note.

MSHDA determined the project's value based on the cost approach to value (i.e., how much it would cost to replace the building if it were destroyed). In this case, because the project is new construction, the replacement cost is simply the construction cost plus the developer's fee. Thus, the value of the project was set at \$6.37 million. V.I.S.I.O.N. borrowed \$5.71 million, resulting in a loan to value ratio of 0.90. The project has a NOI of \$285,000 a year, and debt service of \$220,000 per year, thus the debt service coverage ratio is 1.3.

Sale of Site or Building

MSHDA has, as a condition of their loan agreement, a right of first refusal in the event that V.I.S.I.O.N.S. desires to sell the project.

Monitoring Contamination

The State of Michigan does not require continued monitoring of the site. However, if the owners wanted to remove any of the dirt that is located on the site, they would have to receive permission from the Michigan Department of Environmental Quality.

Lessons Learned

Although the cost of remediation was quite low and the issue of brownfield-type contamination was more perceived than actual, the site had been passed over for development for a long time. Costs were reduced through intelligent site design. Leaving some lightly contaminated soil on site away from structures and covering these "hot spots" with common areas such as parking lots and sidewalks reduced costs. Furthermore, designing the units without basements resulted in reduced construction cost, as well as a reduction in transmission pathways.

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The state absorbs risk, if any, on the back end of the deal. Syndicated tax-credit equity was a major source of equity for the not-for-profit developer, who also makes an adequate rate of return, which it can plow back into achieving its social goals. The builder also made an adequate profit and was able to cover overhead. The group achieving the most benefit, however, is the project's low- to moderate-income residents, who get new housing at affordable rental rates.

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Table 23. Project Data for Helen Odean Butler Apartments

Land Use Information	
Site Area: 8½ acres (370,260 square feet)	
Floor/Area Ratio (FAR): 0.27	
Building Area: 96,000 square feet (96 1,000-square-foot units)	
Number of Tenants: 96	
Development Cost Information	
<i>Land Acquisition Cost</i>	\$118,500 (\$0.32 per square foot)
<i>Site Preparation Costs</i>	
Remediation	\$166,000 (\$0.45 per square foot)
Other site preparation	645,000 (\$1.74 per square foot)
<i>Construction Costs</i>	
Building hard costs	\$4,289,000 (\$44.68 per square foot)
Demolition	0
<i>Soft Costs</i>	
Legal	\$30,000
Architect, planning, miscellaneous (5% of project costs)	339,000
Environmental consultants	50,000
Construction loan/fees/carrying costs (1 % MSHDA loan, fees)	147,000
Developer's fee (5% to V.I.S.I.O.N.S.)	285,000
Builder's overhead and profit (7% of hard cost)	<u>300,000</u>
Total Development Cost	\$6,369,500 (\$66.35 per square foot)
Minus Public Subsidy	100,000
Net Cost to Developer	\$6,269,000 (\$65.31 per building square foot)
 Operating Cash Flow (stable year)	
Subsidized Rents	\$597,000 (\$25G-540/unit/month plus utilities)
Vacancies	(25,000)
Minus Operating Costs	-287,000 (\$3 per square foot)
Net Operating Income	\$285,000
 Financing and Investment	
Value (cost approach)	\$6,369,000
Loan Amount (0.90 LTV ratio)	\$5,711,000
Debt Service (1 % for 30 years)	\$220,000
Debt Service Coverage Ratio	1.01 to 1.30
Before-Tax Cash Flow	\$65,000
V.I.S.I.O.N.S. Equity Requirement	\$654,300
Return on V.I.S.I.O.N.S.'s Equity	9.9%

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The center's programs and initiatives offer applied research, technical assistance, strategic planning, and training to public officials, community leaders, and the private sector with the objective of enhancing the quality of life in urban communities. The center also has expert capacities in geographic information systems, leadership development, communications technology, survey research, and data resources. The Urban Center provides leadership for the collaborative research and public service goals of the Ohio Board of Regents' Urban University Program (UUP).

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For further information on the Urban Center and its activities, please contact Larry Ledebur, Director, The Urban Center, Levin College of Urban Affairs, Cleveland State University, 1737 Euclid Avenue, Cleveland, Ohio 44115.

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