
**A BROWNFIELDS PRIMER
FOR COMMUNITY & ECONOMIC DEVELOPMENT**

Jesse D. Silverstein

**Technical Service Report No. 16
The Rocky Mountain Land Use Institute**



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The Rocky Mountain Land Use Institute at the University of Denver College of Law engages in a variety of educational and research activities related to public interest aspects of land use and development. In addition to providing educational opportunities for students at the College of Law through internships and research projects, the Institute sponsors conferences, workshops and symposia for land use practitioners and citizen groups on specific land use topics. The Institute, working closely with both the public and private sectors, also undertakes and supports research and service projects on selected issues and topics related to land use and development in the Rocky Mountain region. The Institute operates in affiliation with both regional and national advisory boards, the members of which are among the leading practitioners and academics in the field. The Rocky Mountain Land Use Institute is supported by revenues generated by the Institute's own activities, sale of publications, grants and gifts.

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BROWNFIELDS

Brownfields can be defined as abandoned, idled or under-used industrial and commercial facilities where expansion or redevelopment is complicated by real or perceived environmental contamination.¹

1. INTRODUCTION²

While the word "contamination" conjures up images of big cities, heavy industry and billowing smokestacks, pollution impacts urban, suburban and rural communities alike. In a small Colorado mountain community, waste solvents usually associated with machine shops and dry cleaners were discovered in groundwater several years ago. Around the same time, a zinc processor was found to be generating pollution near a 6,000-person mountain town. Brownfields sites are often centrally located in established commercial and industrial districts, in large and small communities alike.

Residents, businesses and government officials all agree to the wisdom of recycling property. Idle or underused property can negatively impact the economic fabric of an affected community. Reusing sites for new development can help reduce suburban sprawl, maintain open space, and reduce infrastructure. The reuse of property is essential to inner ring cities which typically have little vacant land for growth. While there is an urgent need to recycle lands, the real estate market does not always recognize such sites as a viable commodity. Although actual pollution at a site may be minimal, environmental regulations and legal liabilities often impede properties from being cleaned up and reused.

Several factors are now converging to create a market for contaminated property. Environmental regulations and regulators are emphasizing risk reduction rather than removal to achieve safety goals. Concurrently, innovative technology and advanced toxicology models are yielding cost-effective cleanup methods, thus improving the financial feasibility of site reuse. Insurance companies have developed specialized environmental insurance policies to reduce the risk of cost overruns and liability concerns.

1.1 Frequently Asked Questions

What is a Brownfield? A Brownfield is a property that is under-used because of real or perceived environmental contamination. A Brownfield is a property that has lost market value because of a perception that the site might be contaminated.

Why is this an issue? A property impaired by real or perceived hazardous waste may be difficult to put to a higher use, can reduce the value of neighboring properties, and may hinder community and economic development efforts.

¹ The term Brownfields can be defined in numerous ways. This definition provided by the U.S. Environmental Protection Agency is broad in application and encompasses most other interpretations.

² Jesse D. Silverstein, Principal, Development Research Partners, Littleton, Colorado specializes in economic development research and real estate-related financial analysis; authored Brownfields related articles for Brownfields News magazine (National Brownfields Association), the Colorado Real Estate Journal, Denver Business Journal, Municipalities magazine (Colorado Municipal League), and various local business publications; past President Denver Association of Business Economists; past Director, Equitable Real Estate Investment Management; past Chief Appraiser for the Resolution Trust Corporation, Washington, D.C.; MAI professional designation in commercial real estate analysis from the Appraisal Institute.

Aren't Brownfields the site of heavy industry and large manufacturing plants? While there are sites of substantial size, many affected sites are smaller scale and tend to be centrally located in established business, commercial and industrial districts. For example, dry cleaning establishments and gas stations have a high potential to leave residual pollution.

How is a site designated as a Brownfield? An affected site may be privately or publicly held and does not need a "designation" to be impaired. Federal, state and local agencies do not have the authority to designate a site a brownfield. A Brownfields site is simply any property where reuse, expansion or redevelopment is hindered by real or perceived contamination.

Is the property really going to be marketable? The marketability of any particular site after environmental closure will depend on that site's viability for reuse. A major Brownfields program objective should be to remove environmental stigma so market forces will not be impeded. Ongoing stakeholder education, i.e., bankers, real estate brokers, developers, and the public, is important to eliminating stigma.

What is a Voluntary Cleanup Program? Voluntary Cleanup Programs (VCP) are state run, non-regulatory programs that enable property owners to voluntarily assess and clean up polluted sites without fear of regulatory repercussions. Many VCPs provide technical assistance and liability assurances.

Does VCP protect me from federal EPA liability? Some states have a Memorandum of Agreement (MOA) with the EPA providing assurances that the EPA will defer to state voluntary cleanup programs.

What will assessment and cleanup cost? The overall cost of any project is affected by many variables, such as whether there actually is a hazardous condition, the size of the site, the volume of wastes, the concentrations of contaminants, the future use of the site, and the remedial methods selected. In some cases remediation may be ongoing, however, a VCP approved cleanup plan can provide stigma relief.

What should I know about Brownfields?

- A majority of sites are small; environmental issues are as likely to be encountered amongst small businesses and their premises as large industrial sites.
- Perceptions are a hurdle to reuse; contamination is often perceived to be more onerous to address than in reality.
- Property owners may neglect or abandon properties simply due to liability fears.
- There are impacts on surrounding properties; Brownfields properties create external impacts on surrounding property values, reuse potential, and the community.
- Public-private partnering may be needed to bridge economic gaps hindering property reuse and community revitalization; needs may lay in education, technical, and/or financial assistance.

1.2 Report Topics

Communities, both urban and rural, need to make significant advances toward sustainability by reusing Brownfields assets. Since what is sustainable in one community may not be in another, the challenge entails innovative ideas and vision tailored to each community's or neighborhood's unique qualities. Given the public benefits to be gained, there is a clear role for the public sector to provide a cooperative climate for the Brownfields market.

This report provides information to assist communities in:

- identifying opportunities and community impacts from Brownfields redevelopment;
- understanding Brownfields market factors and identifying market failures that keep properties from being reused; and
- developing appropriate policy and public-private partnering mechanisms.

2. A COMMUNITY PERSPECTIVE: RECYCLING A SCARCE RESOURCE

Over time, development patterns necessitate changes in land use. As a result, it is not uncommon to see aging industrial uses adjacent to residential neighborhoods. For instance, early in metropolitan Denver's history, industrial operations located along the South Platte River to access water for operations and to discharge wastes. Riverbanks were lined with landfills. Over time, residences have slowly encroached while newer industrial operations have located elsewhere, leaving behind large and small in-fill locations in need of reuse.

2.1 Changing Business Needs

Today there is a great potential for site contamination at older businesses which operated during times when certain materials were not yet known to be hazardous and were not subject to regulations on use and disposal. Communities are entering a critical period with regard to economic vitality and the impacts of environmental hazards. Businesses operating prior to regulations are now in the life-stage of expanding, relocating or closing. Changes in markets, manufacturing processes, and distribution networks often leave businesses with a surplus of used property.

These properties are being put on the market at a time when modern businesses demand high-functioning utilities and communications capabilities, improved site access and truck loading facilities, and high-utility floor plans and design features. Consequently, older facilities can rapidly become functionally obsolete. Redevelopment of older property has to occur to accommodate modern businesses. However, environmental conditions often limit the marketability and redevelopment potential of sites.

These sites are an economic development challenge for many communities seeking to revitalize aging neighborhoods and commercial districts. Deteriorating properties create image problems while the interim nature of tenants in obsolete buildings erodes the stability of the employment base. There is a community need to attract investors to these sites, to upgrade facilities to meet modern business needs, and to enhance an area's ability to attract new employers and employees.

2.2 Quality of Life

Changing land uses can lead to incompatible uses which negatively impact quality of life. Along a stretch of the South Platte River southwest of Denver, there are property lines where razor wire topped fences mark the boundary between an under-utilized industrial site and a well-used community park. In many communities, riverways are being recognized for their historical and recreational significance and are being returned to public use. For example, drums illegally dumped between the South Platte River and a historic cemetery have been removed to make way for a bike trail.

In some regards, rural Brownfields issues are similar to urban issues. Many small towns have a shortage of neighborhood-serving retail establishments. Traditional retail demographic analysis often inadequately addresses neighborhood demand and can hinder efforts to attract retailers to vacant storefronts and buildings. This challenge may be further complicated by former uses

such as automotive and dry cleaning operations that once located throughout the neighborhood. These commercial nodes offer economic potential and redevelopment opportunities.

There are smart growth benefits to Brownfields redevelopment as well. These in-fill locations provide a cost-effective alternative to edge development. Reusing sites for new development can help minimize sprawl, preserve open space, and reduce the cost of extending roads and infrastructure. The recovery of open space and river corridors is important to a community's quality of life and the ability to attract and retain a qualified workforce.

2.3 Site Uses Associated with Brownfields

Recent newspaper stories illustrate sources of site contamination occurring in western states ranging from radiator repair shops, gas stations and automotive centers at shopping malls to dry cleaners, pesticide applicators, and metal finishing shops. Mobile sources include spills from cargo and tanker trucks.³

Based on operations and processes, Table 1 depicts business activities often associated with Brownfields. This is not intended to imply that all business types listed here are polluting businesses. Rather, these are business activities that involve known hazardous chemicals and have a historical association with Brownfields sites.

Table 1
TYPES OF BUSINESS OPERATIONS TYPICALLY ASSOCIATED WITH BROWNFIELDS⁴

• Agriculture	• Dry Cleaning Activities	• Marine Maintenance	• Plastics Manufacturing
• Automotive Finishing and Repair	• Electroplating Operations	• Metal Fabrication	• Printing Industry
• Automotive Fuel Filling Stations	• Glass Manufacturing	• Mines and Milling	• Railroad Yards
• Battery Recycling and Disposal	• Herbicide Manufacturing and Use	• Munitions Manufacturing	• Research and Educational Institutions
• Chloro-alkali Manufacturing	• Hospitals	• Paint/Ink Manufacturing	• Scrap Metal Operations
• Chemical Handlers	• Incinerators	• Pesticide Applicators	• Semiconductor Manufacturing
• Coal Gasification	• Landfills	• Pesticide Manufacturing	• Wood Pulp and Paper Manufacturing
• Cosmetics Manufacturing	• Leather Tanning/Manufacturing	• Petroleum Refining and Reuse	• Wood Preserving/Treating Facilities
	• Lumber Mills	• Pharmaceutical Manufacturing	
	• Machine Shops/Metal Fabrication	• Photographic Manufacturing/Uses	

To better understand the extent of potential Brownfields on economic activities, Table 2 assigns North American Industry Classification System (NAICS) codes (formerly Standard Industrial Classifications, or SIC) to business operations typically associated with Brownfields, aggregated for the western United States.

- Industries typically associated with Brownfields comprise almost 8% of all businesses and employ almost 12% of all employees in the western states.
- These businesses tend to be small businesses, averaging about 22 employees (15 employees if hospitals are excluded).

³ Compiled by Development Research Partners, Littleton, CO (2000).

⁴ EPA, *Road Map to Understanding Innovative Technology Options for Brownfields Investigation and Cleanup* (1997); Jesse Silverstein, Development Research Partners, unpublished assessors' survey funded by the Colorado Department of Public Health & Environment (2000).

- Many of these businesses are common to commercial and business districts in virtually all towns, of all sizes.

Brownfields sites can impact every community; every community has opportunities that can be realized.

Table 2
INDUSTRIES TYPICALLY ASSOCIATED WITH BROWNFIELDS⁵
AZ, CA, CO, ID, MT, NM, NV, OR, UT, WA, WY

Industry Category	NAICS	No. Businesses	Avg. No. Employees
Agriculture, forestry, fishing, hunting, services	11	7,782	9
Automotive maintenance & repair	81112	5,735	6
Chemical mfg	325	2,703	37
Drycleaning & laundry services (except coin-op)	81232	8,811	7
Fabricated metal product mfg	332	13,544	22
Gasoline stations	447	19,625	9
Hospitals	622	1,249	640
Leather & allied product mfg	316	434	24
Mining	21	4,519	25
Nonmetallic mineral product mfg	327	3,276	27
Paper mfg	322	926	75
Petroleum & coal products mfg	324	358	58
Plastics & rubber products mfg	326	3,361	40
Printing & related support activities	323	9,363	15
Rail transportation support activities	4882	142	22
Recyclable material wholesale	42193	1,699	13
Sawmills & wood preservation	3211	703	51
Semiconductor mfg	3344	2,363	97
Waste treatment & disposal	5622	478	25

2.4 Economic & Community Benefits From Brownfields Reuse

An aging automobile service station becomes a popular main street bistro and a landmark business in a small mountain town. A long vacant industrial piping shop, originally constructed to support an earlier oil boom economy, is rebuilt as a multi-tenant, light industrial facility and home to small businesses and start-ups. Environmental conditions at a former dry cleaning operation have been characterized thus positioning the abandoned site for redevelopment. Each of these sites faced the market perception that previous uses had left lingering environmental problems. And each illustrates how creative engineering solutions and evolving environmental policies and programs have created new jobs, increased tax revenues and furthered community development efforts.

Environmental impairments can create market difficulties and negatively impact the surrounding community. Understanding fiscal and economic impacts can be very useful in evaluating the appropriateness for the community to financially assist in Brownfields redevelopment.

⁵ Compiled by Development Research Partners from U.S. Census Bureau, *County Business Patterns* (1998).

Quantifying opportunity costs and public benefits from reuse are also important in acquiring various state and federal assistance.

For Example: The popular Uptown Bistro Restaurant in Frisco, Colorado represents the successful renovation of a tire service shop which left behind waste oils and hydraulic fluid on a quarter-acre lot. Facilitated by the Colorado Voluntary Cleanup Program, the Bistro renovation eliminated an aging obsolete structure and replaced it with an aesthetically-pleasing building, thereby upgrading the appearance of Main Street. In its new use, the site provides more than \$44,000 annually in additional tax revenues and wages that would not have otherwise been realized, plus a \$330,000 one-time investment in redevelopment.

Economic Benefits from Reuse: Automotive Repair Redevelopment to Restaurant⁶

City Tax Revenues (property & sales)	\$18,000 annual increase
County Tax Revenues (property & sales)	\$23,100 annual increase
School District Tax Revenue	\$1,900 annual increase
Employment	8 new jobs
Average Annual Wage	\$1,200 increase
Construction Spending	\$250,000
New Investment in Business Equipment	\$80,000

For Example: In Fort Collins, a “no further action” letter from the Colorado Voluntary Cleanup Program enabled a private-sector developer to turn a former tubular steel pipe finishing facility into the Timberline Star light industrial facility, currently home to 15 small- and start-up businesses. The 12.5-acre site had been vacant for at least ten years with numerous developers walking away from potential environmental concerns. After redevelopment, the site provides almost \$66,700 annually in additional tax revenues and wages that would not have otherwise been realized, plus a \$649,000 one-time investment in redevelopment.

Economic Benefits: Timberline Star Industrial Park Redevelopment⁷

City Tax Revenues (property & sales)	\$15,200 annual increase
County Tax Revenues (property & sales)	\$10,500 annual increase
School District Tax Revenue	\$16,000 annual increase
Employment	30 new jobs
Average Annual Wage	\$25,000 increase
Construction Spending	\$515,000
New Investment in Business Equipment	\$134,000

⁶ Economic impact analysis by Development Research Partners, funded by the Colorado Department of Public Health & Environment (2000).

⁷ Ibid.

3. A REAL ESTATE MARKET PERSPECTIVE: TRANSACTION IMPACTS

Investment real estate is purchased on its ability to create cash flow. Similarly, owner-occupied business assets are purchased based on cash flows representing an ownership versus leasing decision. In either case, transaction price is based on applying a desired rate of return (capitalization rate) to net revenues (rental income less operating expenses, less reserves for anticipated and unanticipated capital investments over time). The capitalization rate reflects the inherent risk in the property. These relationships, and potential impacts from environmental hazards, are depicted as:

Potential Impacts on Real Estate Market Pricing

Gross Rent	Low rental rates due to environmental stigma, low desire to make capital investment in already impaired facility, or restrictions on use to avoid disturbing contaminants.
- Expenses	High expenses due to the operations and maintenance of engineering remedies, ongoing regulatory reporting requirements, or extraordinary insurance costs.
= Net Income	Below market due to low rent and/or high expenses.
<u>/Rate of Return (cap rate)</u>	High capitalization rate due to a more complicated investment, perceived risk of achieving investment goals or potential, environmental-related, future liabilities.
= Market Value	Below market due to low net income or high capitalization rate.
- Required Capital Items	Additional monetary reserves taken against environmental cleanup cost overruns and future liabilities.
= Price	Because of the environmental variables above, buyer and seller may not agree on sales price and sale does not consummate.
subject to:	
Financing	May not be available, may require higher equity, and/or may carry a higher interest rate.
Occupancy	Tenants and owner-occupants may be subject to erroneous litigation/liability, i.e., an environmentally compliant plating shop may be held liable for contamination left by a former plating shop tenant.

3.1 A Segmented Market For Brownfields Sites

In any transaction, a sufficient rate of return is necessary to make a property transaction viable. Rate of return, and consequently feasibility, can be attributed to going-in purchase price, going-out sales price, or the cost to get from one to the other. This becomes quite obvious with Brownfields sites. Some buyers seek higher risk properties and potentially higher rates of return, while others are simply interested in property utility and location. Broadly speaking, the former seek out impaired properties to profit from value recovery. The latter seek a location for their business or long-term real estate investment, and may reject an acquisition if environmental risks are encountered.

Segment 1: Opportunistic Investors

As a generalization, opportunistic investors prefer to buy "dirty" property to clean and "flip" for significant profit. Opportunistic "value-added" Brownfields investors typically seek as much as 25% to 40% returns, compared to 10% to 15% required for moderate risk real estate. Because

of high investment risk, these value-added investors are seeking strong locations, good market economics, and highly motivated sellers.

Highly motivated sellers may include corporations holding a surplus of obsolete property. For example, Gillette Co. recently announced plans to downsize and close factories and warehouses nationwide. This may result in surplus property to be sold at a discount for tax and/or accounting reasons. Other companies desire to quickly unload contaminated properties against which they carry FASB⁸ environmental reserves on balance sheets. Surplus properties have even been given away in exchange for environmental indemnifications releasing the former owners from future liability. Ownership situations can also result in discounted prices. For example, after reluctantly inheriting a stainless steel fabrication facility in north Denver and not wanting to invest the time to understand the inherent environmental issues, the new owners unloaded the potentially contaminated property to an opportunistic investor. The buyers obtained a "no further action" designation from the state VCP program and quickly resold the property for a substantial return.

Segment 2: Business Asset Investors

Many businesses buying smaller sites are only interested in buying clean properties to operate their business, rather than being in the cleanup business. Although reuse may be a priority for the community, a site may remain vacant or underused if environmental remediation is not undertaken prior to the transaction. These properties remain a challenge for many communities seeking to revitalize commercial districts.

While deep-pocketed sellers can offer discounts on surplus assets, smaller sites, such as automotive service and downtown dry cleaners, often do not intrinsically have such "Corporate Discounting." In fact, for many small owner-occupied properties, the seller simply cannot absorb discounts because there is a mortgage to pay off, or they are expanding to another location and need to cash-out on their existing assets for financing purposes. In these instances, a site may remain underutilized and unavailable for a higher use.

Smaller sites have difficulties in attracting developers looking for investment opportunities. In fact, market conditions and lack of funds were recently cited as the two highest hurdles in redeveloping rural Brownfields properties.⁹

Small site dimensions of many older business district properties mean that contaminants can quickly disperse across multiple property lines. Responsible parties are often difficult to identify, complicating efforts to remove environmental liability risks and increasing the difficulty in assembling sites for reuse. Secondary markets and locations further reduce developer interest.

⁸ The Financial Accounting Standards Board establishes standards for financial accounting, preparing, and reporting financial reports, as recognized by the Securities and Exchange Commission and the American Institute of Certified Public Accountants.

⁹ National Association of Development Organizations Research Foundation, *Reclaiming Rural America's Brownfields* (December 1999).

Renovation of the former automotive repair site in Frisco, Colorado, now the Uptown Bistro, is one example of a small site buyer. The transaction was almost scuttled when contamination was discovered on site:

- Environmental site conditions were not considered until a few days before the closing.
- The buyer did not understand, or want to understand, the issue.
- The buyer was ready to walk; the buyer was not looking for a real estate opportunity, but rather for a business location.
- The lender did not understand, or want to understand, the issue and did not want to fund it.
- Closure through the VCP program provided sufficient assurances for the buyer and the lender.

3.2 Environmental Due Diligence in Property Transactions

Prior to 1980, buyers and sellers of industrial or commercial properties were not very concerned about environmental liabilities. That changed with passage of the federal Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA)¹⁰ which made past and current property owners liable for the cleanup of environmental contamination found on a property, whether or not they were the actual polluters. As a result, environmental laws may leave property owners responsible simply because they own the site being impacted, or had owned the site in the past.

On any site, there is a possibility that solid and liquid materials, above ground or below ground, left over from earlier times may today be classified as hazardous. Or, materials considered to be hazardous may have inadvertently been released during the course of everyday business. Legal liabilities may even be posed by hazardous materials located on neighboring properties that may leach onto a site.

Environmental considerations before closing a real estate transaction should include investigating past uses of the property and also investigating past uses of adjacent properties to evaluate risk exposure. It is wise to ensure that former on-site environmental hazards were corrected and meet today's standards. Site recognition is useful for planning construction activity that could disrupt and spread contaminated soils if they are present.

Environmental site assessments are studies intended to identify potential environmental risk exposures. Commercial property evaluations generally follow guidelines developed by the American Society for Testing and Materials (ASTM) commonly known as "ASTM Standards." ASTM standards identify the steps to take prior to taking title to property. ASTM outlines a two-phase approach to environmental site assessment usually prepared by environmental consultants.

¹⁰ The Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), commonly known as Superfund, was enacted by Congress on December 11, 1980, amended by the Superfund Amendments and Reauthorization Act (SARA) on October 17, 1986.

A **Phase I Assessment** answers the question, "is there potential contamination?" Basically, three types of research are required for a Phase I investigation:

- A review of written records regarding the property.
- A physical inspection of the site.
- Interviewing persons familiar with the property.

If the Phase I investigation finds evidence of potential site contamination, a **Phase II Assessment** is performed. Generally, Phase II work is more detailed, relying on "intrusive" investigation. Phase II investigations answer the questions (1) "are there contaminants present?" and (2) "is there a need for action?" Remedial action is necessary when soils, subsurface soils, surface waters, groundwater, sediments, or related media are contaminated beyond regulatory standards. Elements of a Phase II investigation may include:

- The collection of soil, water, and/or groundwater samples in or near areas of environmental concern.
- Soil samples collected by simply digging at the surface with a shovel or trowel. Deeper soil samples may be collected using a drilling rig or related sampling device.
- Groundwater samples collected using a drill rig to install monitoring wells or a Geoprobe rig to install temporary monitoring points.

If hazardous materials are found in quantities that exceed public health and safety standards, corrective actions are indicated. At this point, a qualified environmental engineer should be engaged to design an appropriate remedial action plan. Remedial actions can include in place (in-situ) remedies, removal (ex-situ), deed restriction on uses, and other innovative techniques. In-situ remedies may include containment, vapor extraction, air sparging, flushing, and chemical extraction techniques, while ex-situ remedies may include excavation, soil washing, thermal desorption, and stabilization techniques.¹¹

3.3 Environmental Insurance and Risk Management

Even after testing and professional engineering estimates, actual cleanup costs are certain only upon completion. This financial uncertainty prior to cleanup can reduce market interest in a property. Similarly, financial risks associated with potential third party law suits and regulatory re-openers can further reduce interest in a property. Environmental insurance gives prospective purchasers, developers and lenders the ability to quantify risks and returns, and effectively plan their investment strategy.

An array of privately underwritten environmental insurance products, emanating from the property and casualty insurance industry, have been developing since the early 1990s. These various insurance policies are designed to transfer risk to the third party insurer, thereby relieving potential environmental deal-breakers. Environmental insurance products can be broadly classified as:

- **Business Operations Liability Coverage** for businesses and occupants on site.
- **Cleanup Cost-Cap (Stop-Loss) Coverage**, places an upper limit on the costs of cleanup which site redevelopers may have to pay.

¹¹ Arshud Mahmood, Government Institutes, *Site Investigation, Remediation, and Closure, A Simplified Guide for Environmental and Real Estate Professionals* (1998).

- **Legal Defense Coverage**, for lawsuits associated with liability claims made by enforcement agencies or third parties.
- **Regulatory Action Coverage**, for costs associated with any future required site cleanup including re-openers where regulation changes regarding a known condition necessitate additional, post-closure site work. This may also include formerly unknown conditions that were not discovered during due diligence. This coverage can also cover the costs associated with business interruption losses.
- **Professional Liability Coverage** for “errors and omissions” by public and private entities addressing cleanup and other contamination issues.
- **Secured Creditor Coverage** enables lenders to insure their loan portfolios against environmental-related lending risks.

Applications for Environmental Insurance in Site Reuse

While environmental insurance increases transaction costs, it creates a more predictable investment market, enhances the stability of a particular investment through risk management, and can actually enhance project feasibility. Risk management may be appropriate at various phases in a reuse project:

- **Site selection and property acquisition** by a business or developer will entail an assessment of potential environmental concerns, which may raise going-in liability risks above the buyer's or developer's risk threshold. Risk Management: legal defense coverage; regulatory action coverage.
- **Cleanup activities** that may be required to obtain “no further action” status carry budgetary constraints and may attract third party damage claims. Risk Management: cleanup cost cap/stop-loss coverage; legal defense coverage.
- **Ongoing business operations** on-site, whether an owner-occupant or tenant, may mirror former operators who caused a pre-existing condition, thus clouding the liability chain. This may make it difficult to find a new occupant willing to step into the situation. Also, new occupants may aggravate pre-existing conditions or create detrimental conditions of their own, rendering regulatory closures void. Risk Management: business operations liability coverage; regulatory action coverage.
- **Financing** for property acquisition or the sale or securitization of notes can be hindered by environmental risks from pre-existing conditions, on-site business operations, and potential regulatory re-openers. Environmental insurance is being used as a risk management and loss prevention tool for commercial loan portfolios. Risk Management: business operations liability coverage; regulatory action coverage; legal defense coverage; secured creditor coverage.

Additionally, construction work at contaminated sites carries safety risks for on-site laborers and professional liability risks for site consultants, such as architects and engineers. Construction contractors may benefit from business operations coverage and there are specialized professional liability products for consultants.

4. PUBLIC-PRIVATE PARTNERING: DESIGNING LOCAL PROGRAMS

Private-sector Brownfields redevelopment holds many public benefits. However, many jurisdictions regard Brownfields solely as an environmental problem rather than a factor potentially impacting the feasibility of any community or business development effort. Environmental-related costs may raise total project expenses above feasibility levels, thereby slowing private-sector renovation and redevelopment. This is particularly true in neighborhoods experiencing moderate or weak economic conditions.

As part of a comprehensive approach, local government can facilitate one or all phases of the Brownfields redevelopment process¹²:

- **Visioning**- recognizing a community need or business opportunity for property reuse.
- **Evaluation**- evaluating project viability, economic impacts, and environmental conditions.
- **Transaction**- property title is transferred, along with regulatory and liability risk management issues.
- **Implementation**- construction, renovation, and environmental remediation.

Given limited financial and staff resources, facilitation can range from passive to proactive. Passive programs may be as simple as recognizing an opportunity, fostering business or community interest, providing Brownfields information and contacts, and accessing existing development incentive programs. Proactive involvement may entail outreach, targeting sites for redevelopment, establishing a formal Brownfields funding program, and possibly taking interim or ultimate ownership of a property.

4.1 Program Activities

The reuse of environmentally impaired properties has developed into a national discussion since the easing of federal regulatory guidelines in the mid-1990s. Local government initiatives are yielding “best practices” to accomplish a variety of community and economic goals.¹³ Best practices include:

- **Educate** property owners, developers, businesses, lenders, and city/county departments to overcome misperceptions and build support for local projects. These stakeholders are often uninformed about Brownfields and fear potential liability and reduced property marketability after redevelopment. Conveying information about risk-based cleanup approaches, cost-effective engineering solutions, liability management options, and available funding programs is important in generating interest in Brownfields redevelopment.
- **Integrate community priorities.** Multiple community concerns, such as a lack of private capital investment in maintenance and property improvement, vandalism, public safety concerns, and a declining tax base, may be addressed by bringing properties to a higher and better use through Brownfields redevelopment. For example, redevelopment of a six-

¹² American Society for Testing and Materials, *Standard Guide for Process of Sustainable Brownfields Redevelopment*, Designation: E 1984-98 (1998).

¹³ see International City/County Management Association, *Putting the Pieces Together, Local Government Coordination of Brownfield Redevelopment* (1999); International City/County Management Association, *Beyond City Limits, Best Practices from ICMA's 1998 Brownfield Peer Exchange* (1999); U.S. Department of Housing and Urban Development, Office of Policy Development and Research, ICF Consulting & E.P. Systems Group, Inc., *Assessment of State Initiatives to Promote Redevelopment of Brownfields* (1999).

parcel assemblage for needed housing was recently stalled when underground fuel tanks were discovered beneath one of the parcels (a former gas station/small commercial use site). Similarly, cleanup and reuse can create needed space for business and tax base expansion.

- **Coordinate intra-governmental relations.** Because Brownfields redevelopment is a land use and development activity, traditionally independent government departments may have a common interest in a project. A team approach involving appropriate departments, including Economic Development, Planning, Public Works, Environmental/Solid Waste, Housing, Public Safety, Engineering, Transportation, Health and Human Services, and Legal may be needed.
- **Coordinate intergovernmental relations** between city, county and state contacts for securing project approvals, funding assistance and closing regulatory environmental issues. According to a nationwide survey, investors ascribe economic value to the regulatory benefits provided by voluntary cleanup programs and the most effective jurisdictions work closely with state and federal environmental regulators. Assurances offered by Colorado's Voluntary Cleanup Program are often cited as a key factor in reducing uncertainty about regulatory outcomes, minimizing regulatory red tape, and addressing environmental hurdles.
- **Coordinate the various stakeholders.** Brownfields redevelopment can be public-sector driven, private-sector driven, or a combined effort depending on the project. As with other land development activity, identifying appropriate parties and managing relationships, including the community, is essential to a successful project.
- **Operate as an information clearinghouse** to engage the interest of businesses and developers seeking locations matching Brownfields opportunities. This may simply entail broadening the vision of economic and business development services that many jurisdictions already provide. Nationally, some municipalities maintain an inventory of Brownfields sites for planning purposes and prioritize investment opportunities, while others see inventories as too costly or stigmatizing certain properties.
- **Coordinate and/or provide funding** to enhance project viability and address Brownfields issues. This may include grants and low-interest loans to pay for environmental investigation, cleanup and construction activities. Existing local programs to increase feasibility may be applicable such as economic development subsidies and tax incentives. It may also entail identifying and packaging bank financing, outside governmental funding, and non-profit sources of capital. In some instances, direct public investments in infrastructure, site acquisition, risk management, or other project-related outlay is warranted. Financial assistance to local governments to seed Brownfields programs or for a specific project are available from federal and state sources on a limited basis.
- **Utilize a Coordinator.** Potentially onerous issues involved in Brownfields redevelopment often make them too complex for any single person or agency to understand fully and direct experience with environmental regulations is limited. It may be useful to have a designated staff person, hire a consultant, or borrow a state or federal facilitator to implement Brownfields activities.

4.2 Providing Financial and Technical Assistance

For properties where feasibility is clear, redevelopment will likely proceed with little prompting. However, construction costs, environmental costs, and risk-related cash reserves that may be required negatively impact buyer interest. Type and capacity of local programs must address the reuse status of Brownfields properties they are seeking to address.¹⁴

Viabile Sites. Sites that are economically viable have very low potential for environmental liability or have such high potential rates of return that investment advantages outweigh potential environmental risks.

- High rates of return are sufficient to overcome environmental issues and attract private market interest. Although these sites should require little or no direct public capital investment, deals may still require assistance with streamlining regulatory issues.

Threshold Sites. Sites that are only marginally viable and will not be redeveloped without some public assistance. These sites may have either fewer economic advantages than the viable sites, or they may have greater potential for environmental liability.

- These sites have fewer economic advantages than viable sites and therefore may have limited market interest. The addition of environmental risk to an already marginal investment may create a nonviable investment situation which may require some form of public investment to enable reuse.

Non-Viable Sites. Sites with significant potential for environmental liability, and/or whose economic advantages are minimal and unlikely to attract market interest.

- These sites may require substantial public assistance to redevelop (in the form of subsidies), and possibly may be unsuitable for reuse. Environmental quality may be a higher priority than economic development and may be suitable candidates for existing programs, such as Superfund, that are targeted towards sites with significant contamination.

Changing market conditions, site investigations, and regulatory closure can shift sites from being threshold or non-viable to a viable position. As examples in Colorado, the legalization of gambling in Central City generated casino development despite a century of contamination from nearby mining, and a regulatory no-further-action letter enabled the Timberline Star Business Park redevelopment in Fort Collins.

Identifying and addressing specific transactional issues that can make a site viable is important in administering an effective Brownfields program. More specifically, environmental risk can create economic gaps that stall property transactions and site reuse. Potential economic gaps include:

Liability Gaps are attributable to risks created by being in the chain-of-title and therefore eternally liable under federal environmental law including potential regulatory re-openers where additional, future cleanup work is required, and lawsuits by third parties for damages to persons or property. This gap may be bridged by regulatory “no further action” letters, utilizing sales contract risk indemnifications and specialized insurance policies to back up such indemnifications.

Feasibility Gaps occur when environmentally related costs (perceived or actual) cause overall development costs to exceed value on new construction or significantly reduce the

¹⁴ USEPA Environmental Financial Advisory Board, *Financing Strategies for Brownfields Redevelopment* (March 1996).

rate of return on investment in existing property. This can be bridged by using risk-based and more cost effective cleanups, utilizing specialized no- or low- cost cleanup fund programs, and minimizing potential cleanup cost overruns with fixed price contracts or cost-overrun insurance.

Financing Gaps refer to a lack of market financing, higher down payments, or increased interest costs. Risk to collateral value and liquidity can restrict capital availability. Lenders are also concerned that environmental situations may interrupt business operations and the ability to repay a loan. This gap may be bridged by reducing perceived risk to the lender through site assessment, regulatory "no further action" letters, loan buy-downs, utilizing supplemental equity or credit enhancement programs, or "secured creditor" insurance policies benefiting the lender for collateral risk.

Pricing Gaps are created when the potential environmental cleanup costs and associated liabilities are unknown and forestall a buyer and seller from knowledgeably negotiating a purchase price. This can be bridged by quantifying cleanup costs through site assessment and engineering studies, and through regulatory "no further action" letters or approved cleanup plans.

Supply Gaps refer to an owner keeping property off the market as a way to manage environmental risk and avoid regulatory intrusion. This gap may be bridged by educating property owners regarding regulatory options, voluntary cleanup programs, and encouraging cleanup and capital investment.

Brownfields programs may specifically target environmental issues, such as funding environmental site work, or may generally enhance project feasibility, such as tax rebates. Similarly, specific problematic sites may be targeted, or there may be a broader focus on rejuvenating a particular neighborhood or commercial/industrial area.

4.3 State and federal support

State and federal financial and technical support is available to seed local programs. Table 3 summarizes western state Brownfields programs as of this writing.

Table 3
STATE BROWNFIELDS PROGRAMS¹⁵

State	VCP	EPA MOA	Financing Programs/Incentives	Contact
Arizona	Yes	No	<ul style="list-style-type: none"> Phase I assessment grants Brownfields Cleanup RLF (Phoenix & Tucson) Sites can be reclassified as Class 8 property with assessment ratio of 5% 	<p>Arizona Department of Environmental Quality 3033 North Central Avenue, M0501D Phoenix, AZ 85102-2809 P: 602-207-4109; in Arizona 800-234-5677 ext 4109 F: 602 207 2302</p>
California	Yes	No	<ul style="list-style-type: none"> Urban Cleanup Loan Program Mello-Roos Districts allows community to abate property taxes and issue bonds to capitalize RLFs for site assessment and cleanup Brownfields Cleanup RLF State tax credit for remediation 	<p>California Department of Toxic Substances Control 10151 Croymden Way Sacramento, CA 95827 P: 916-255-3745 F: 916-255-3696</p>
Colorado	Yes	Yes	<ul style="list-style-type: none"> Brownfields Cleanup RLF State tax credit for remediation 	<p>Colorado Department of Public Health and Environment 4300 Cherry Creek Drive South Denver, CO 80246-1530 P: 303-692-3300 F: 303-759-5355</p>
Idaho	Yes	No	Idaho Land Remediation Act: sites may qualify for a 7- year, 50% tax break on property appreciation due to remediation	<p>Idaho Division of Environmental Quality Waste Management and Remediation 1410 North Hilton Boise, ID 83706 P: 208-373-0285 F: 208-373-0576</p>
Nevada	Yes	No		<p>Nevada Division of Environmental Protection 333 West Nye Lane Carson City, NV 89706-0851 P: 775-687-4670 ext 3024 F: 775-687-6396</p>
New Mexico	Yes	Yes	<ul style="list-style-type: none"> Municipally owned Brownfields eligible for low interest loans from Clean Water State Revolving Fund NMED can grant Phase I and II assessments at municipally owned sites 	<p>New Mexico Environment Department Ground Water Quality Bureau 1190 St. Francis Drive, Room N- 2300 Santa Fe, NM 87502 P: 505-827-2754 F: 505-827-2965</p>

¹⁵ Northeast-Midwest Institute, *Brownfields "State of the States"* (Revised October 2000).

Table 3 (continued)

Oregon	Yes	No		Oregon Department of Environmental Quality 811 S. W. 6th Avenue Portland, OR 97204 P: 503-229-6834 F: 503-229-6954
Utah	Yes	No	<ul style="list-style-type: none"> • Capital Access Program offers loan portfolio insurance for environmental evaluations and Brownfields redevelopment projects • Credit Enhancement Fund offers loan or credit guarantees for environmental evaluations and Brownfields redevelopment projects • Brownfields Redevelopment Loan Fund can finance environmental evaluations • Special Public Works Fund available to small local and tribal governments for environmental evaluations on municipal property • Brownfields Assessment Grants from DEQ may be used at publicly controlled sites • City of Portland has its own Brownfields RLF 	Utah Department of Environmental Quality Division of Environmental Response and Remediation 168 North 1950 West, 1st Floor Salt Lake City, UT 84116 P: 801-536-4100 F: 801-536-4242
Washington	Yes	No	<ul style="list-style-type: none"> • Remedial Action Grant Program 	Washington Department of Ecology 3190 160th Avenue SE Bellevue, WA 98008-5452 P: 425-649-7202 F: 425-649-7098
Wyoming	No	No		Wyoming Department of Environmental Quality Herschler Building 122 West 25th Street Cheyenne, WY 82002 P: 307-777-7758 F: 307-777-7682
VCP = State Voluntary Cleanup Program; EPA MOA = Memorandum of Understanding between State and USEPA				

5. BROWNFIELDS CASE STUDIES

The following case studies are included because they represent Brownfields activities in the western U.S. and/or site uses similar to those found in the west.¹⁶

5.1 Transactions

Former Automotive Repair Shop to Popular Restaurant, Frisco, Colorado

This 0.24-acre former automobile service site is located on Main Street in the mountain town of Frisco, Colorado. After contaminated soil (waste oils & hydraulic fluids) was cleaned up under the Colorado Department of Public Health and Environment Voluntary Cleanup Program, the site subsequently sold and was redeveloped from a tire and automotive service garage to a family-owned, fine dining restaurant.

After being put under sales contract, environmental condition was revealed during the buyer's due diligence. The seller cleaned up the site which was subsequently purchased and redeveloped as the Uptown Bistro restaurant. The property buyer, broker and lender were interviewed with regard to the cleanup, sale and redevelopment of the site. The seller declined to be interviewed.

The listing broker indicated that the tire store property was an asset in the seller's larger portfolio of investment properties and was targeted for liquidation. While not a distress situation, the seller was highly motivated to sell the tire store site. It can be inferred that in the interest of quickly liquidating this asset from their portfolio, the seller absorbed the environmental assessment, cleanup costs, and legal fees.

At the time the property was put on the market, the local real estate market was slow and there was not significant market interest for older properties such as the tire store. The listing broker indicated that the asking price may have been reduced due to the seller's knowledge of existing environmental site conditions.

The site offered an ideal location for a restaurant. The buyer was interested in the property because of its location and the perceived bargain price. However, there were significant concerns regarding the hazardous materials at the site. The buyer reported that they did not want the responsibility to clean the site. Additionally, the cleanup cost would have made the transaction financially infeasible for the buyer if they were to have purchased "as is." The buyer insisted on purchasing a clean site and was willing to withdraw the purchase offer if the seller did not respond accordingly.

The buyer stated their lender was also sensitive to the environmental issue and would not have closed the loan without the cleanup having been completed. The lender had no property specific information but stated that it is the bank's policy not to lend on sites that have a current environmental impairment. The lender required that cleanup be completed before they would finance the purchase.

Factors complicating the transaction included the costs and logistics of cleaning up the site. The environmental assessment and cleanup of the site had to occur in a timely manner and in a way that was acceptable proof of closure to the buyer and its lender. Although the seller knew there

¹⁶ Compiled by Development Research Partners from various sources including DRP files, USEPA, and various news media.

were existing conditions, (according to the transaction broker), they were surprised by the cost estimates to remediate the site.

An application was submitted to the Colorado Department of Public Health and Environment (CDPHE) Voluntary Cleanup Program in May, cleanup was completed, and the property subsequently sold to the buyer in July. A timely response by the Colorado VCP program enabled the transaction to close in a timeframe that met the buyer's needs. The buyer specifically referred to the VCP closure letter as being the operable instrument to keep the sale on track. Fortunately, the lender was patient and understanding, maintained an interest in the deal and financed the transaction upon environmental closure. The broker reported that although the transaction was arduous, the seller spoke highly of the Voluntary Cleanup Program and the results achieved.

Observations: As illustrated by the sequence of events, environmental conditions were an afterthought on the part of both buyer and seller. Both the buyer and seller were surprised by the relatively high cost of environmental assessment and cleanup. Without a patient buyer and lender, the delay caused by the environmental condition could have caused this sale to fall through. Despite the potential pitfalls, several factors came together to enable this deal to happen.

- The seller absorbed the cost of assessment work which resulted in a financial loss. This property was part of an investment portfolio held by the seller; the balance of the portfolio likely provided a financial cushion with which to absorb the losses on this particular asset.
- It would not have been financially feasible for the buyer to clean the site. If the property were being sold by an individual or other entity without a financial cushion, assessment and cleanup would likely not have been undertaken.
- Site cleanup under Colorado's Voluntary Cleanup Program resulted in a relatively quick resolution of environmental issues and provided necessary assurances to the buyer and lender.
- The site presented an ideal location for its intended new use and explains the patience of this particular buyer in working through the environmental issues.
- Economic gaps impacting this deal include:

Feasibility Gap: Despite the advantageous location for their particular use, the hassle and cost to clean the site would have driven the buyer away, rather than purchasing the site "as is." Because of financial factors operating in the background, the seller was able to absorb the costs of cleanup.

Financing Gap: Deal financing was dependent on the site being cleaned to regulatory standards.

This site exemplifies a "Threshold Site," an environmentally impaired property that possesses economic potential; however, environmental conditions create a nonviable situation. In the case of this site, environmental closure by the seller in combination with regulatory assurances provided by the VCP were sufficient to keep this redevelopment viable.

Abandoned Piping Facility to Small Business Incubator, Fort Collins, Colorado

The Timberline Star Industrial Park is a multi-use light industrial facility located on the eastern edge of the City of Fort Collins. The 12.5 acre site is the former location of the Fort Collins Pipe Company tubular steel pipe finishing operation. Fort Collins Pipe ceased operations in the mid-1980s and the property sat vacant and for sale for at least five years. Eventually, environmental cleanup and closure was completed under the Colorado Voluntary Cleanup Program. The site sold and was subsequently redeveloped to its current light industrial use catering to small and start-up businesses.

While it operated, the Fort Collins Pipe Company facility finished pipe and tubular products for oil well operators in the Colorado/Wyoming region. Having operated at this location for many years, diminished regional demand forced the company to close this facility in the mid 1980s. Poor property condition created a challenging real estate investment which was compounded by unknown environmental conditions. Lone Star Steel cited potential environmental hazards as a primary reason that the site did not sell during this period. According to the eventual buyer and purchasing broker, there were many potential buyers who lost interest because of perceived environmental conditions.

This property was a surplus business asset held by Lone Star Steel. In the interest of removing this asset from their books, Lone Star absorbed the environmental assessment and cleanup costs necessary to gain buyer acceptance. Lone Star Steel began environmental assessments to position the property for sale and applied for regulatory closure under VCUP. In positioning the site for sale, Lone Star Steel undertook an environmental assessment of potential concerns including underground storage tanks, wastewater lagoons, a drum storage area, and waste disposal pits on an adjacent 1.8 acre tract leased from Union Pacific Railroad.

The buyer and redeveloper is a local partnership which saw an investment opportunity to rehabilitate the property to meet a market niche. However, the buyers stated that they would not have bought the property with potential environmental problems or without the assurances that the Voluntary Cleanup Program offered. Closure through the VCUP was instrumental in their decision to move forward with the deal. In fact, the buyers began investigating the site for purchase around the time that assessment work was begun, but did not put the property under sales contract until the remediation was completed and approved by the VCUP. Financing was provided by one of the ownership partners (rather than a lending institution) and was dependent on the environmental issues being put to rest prior to purchase.

Observations: The Timberline site went from a vacant, deteriorating property to an active light industrial use. As a result, local employment and public revenues both increased.

- The seller absorbed the cost of assessment and cleanup work, which resulted in a net zero financial gain on the sale of real estate. This property was a surplus corporate asset requiring accounting reserves and carrying other corporate financial impacts. As such, it was cost-effective for Lone Star to dispose of the property at a net zero gain.
- The property sold for a discounted price after having been on the market for an extended period. The buyer likened the deal to paying for the land and getting the buildings for free.
- If the property were being sold by an individual or other entity without a greater financial purpose, assessment and cleanup may not have been undertaken. Further, a buyer may not have been willing or financially able to clean the site.

- Site cleanup under Colorado's Voluntary Cleanup Program resulted in a relatively quick resolution of environmental issues and provided necessary assurances to both buyer and seller.
- Location factors are improving and the current light industrial use is awaiting market conditions to potentially warrant additional property upgrades. As an interim use, the Timberline site is environmentally well positioned.

Economic gaps impacting this deal include:

- Feasibility Gap: Prior to environmental closure, the property was being impacted by a feasibility gap. If a single party had borne the costs of site acquisition, cleanup and redevelopment, the deal would likely have not been financially feasible. The seller absorbed the cleanup cost and sold the site at a discount to eliminate a surplus asset, thus enabling a feasible redevelopment by the buyer.
- Financing Gap: Both the purchase and financing decisions were contingent on the site being clean.
- Liability Gap: Potential responsibility for environmental liabilities dashed the interest of many prospective buyers. The sellers provided a contractual indemnification to the buyers whereby the seller retained responsibility for pollutants on-site before the sale. The buyers viewed the VCUP closure as a way of benchmarking and documenting this agreement.

The Timberline Star site is a "Threshold Site" wherein potential environmental conditions hindered the reuse on an otherwise viable redevelopment project. The sellers positioned this property for the market by undertaking environmental assessment and remediation work necessary to alleviate regulatory concerns.

5.2 Reuses

Obsolete Oil Refinery to Residential Development, San Francisco Bay, California

After three years of demolition, environmental remediation, and gaining entitlements, Catellus Residential Group has begun development of the "Victoria by the Bay" project on the site of an obsolete oil refinery on the San Francisco Bay. Upon completion, the community will include up to 880 homes, six acres of retail and a new elementary school. The project also includes a comprehensive network of parks and trails including the completion of a key new link in the regional bayshore trail system. The joint venture between Catellus Development Corporation (a real estate development company) and an environmental remediation company acquired the site in 1997.

Closed Steel Mill to Racing Venue, Ontario, California

California Speedway has grown into one of the premier NASCAR auto racing venues in the country, hosting two major racing weekends which are the largest attended sporting events in the state. The Speedway is located on the 588 acre former Kaiser Steel Mill Site. Kaiser Ventures Inc. sold the "Mill Site" to CCG Ontario, LLC (CCG) for \$16 million plus the assumption of substantially all related environmental liabilities and obligations associated with the Mill Site. As a part of the transaction, the California Department of Toxic Substances Control (DTSC) entered into a Consent Order with CCG requiring, among other things, the continuing investigation and remediation of the Mill Site. As a result, the DTSC terminated its Consent Order with Kaiser, which relieves the company of its cleanup obligations and required financial assurances. In addition, CCG provided, to the benefit of Kaiser, environmental insurance and

other financial assurances to back its assumption of the environmental liabilities. At the time of sale, Kaiser was struggling to come out of bankruptcy. Turning the obsolescing steel mill property into a valuable and productive asset was a win-win situation for both the Company and the community.

Steel Mill Positioned for Redevelopment, Provo, Utah

The 338 acre USX-Ironstone steel plant site, the largest underutilized tract of land in Provo, is being positioned for new uses that will likely include a commercial/industrial business park that could create hundreds of new jobs and generate more than \$400,000 in annual tax revenues. USX is cleaning up the site in accordance with a risk-based industrial standard agreed upon between USX and the state's Department of Environmental Quality. Brigham Young University students completed a study of the property and recommended steps necessary to return the site to productive use. The city coordinated outreach activities to keep the surrounding community informed of the project, and developed detailed plans to manage the site during its cleanup and reuse.

Water Treatment Plant Recycled into Community Park, Denver, Colorado

This 75 acre site was originally the Northside Wastewater Treatment Facility constructed in the 1930s and closed in 1984. Minimal wastewater activities remained at the site until 1994 when the property was turned over to the city as surplus property. By 1995, this former wastewater treatment plant had physically deteriorated and been ransacked, looted, and defaced with graffiti. As this was going on, the City was meeting with Colorado National Guard, the Globeville Civic Association and various other public and private organizations in an effort to find a path to redeveloping the site as parkspace. As a result, the site is now in use as a regional park, wildlife preserve, and National Guard facility, which regularly opens its doors for various community uses. The surrounding community is undergoing an economic resurgence that is directly attributable to the removal of the old plant and the redevelopment of the site.

Eight Brownfields Public/Private Partnership Projects, Portland, Oregon

The Portland Development Commission and the City's Portland Brownfields Initiative (EPA grant funded) are providing technical and financial assistance to further the redevelopment of eight privately held sites.

- A new three-story office building, including a garden/conservatory is planned for a now-vacant 6,200 square-foot former gas station site. Technical assistance has tested negative for petroleum hydrocarbons, with additional contaminant testing underway to clear the site of environmental stigma.
- Public transit provider Tri-Met is planning an Interstate Max passenger station on property adjacent to a now vacant, 9,900 square-foot, former auto repair business site, which may be contaminated by petroleum hydrocarbon, solvents, metals, and hydraulic lift and transmission fluids. Owner P.M. Financial Services is considering remodeling or redevelopment of the former automotive site that may include a multistory mixed-use project with commuter-related ground-floor services and residential units on the second floor. Assistance will be provided to verify if contamination is present and if so, to devise a cost-effective remedy.
- Port City, a not-for-profit organization that provides life-skills job training for developmentally disabled people, is planning a campus on a 52,000 square-foot site that once housed a battery and manufacturing businesses. The campus will include a job-

skills center and housing units for between 12 and 18 disabled high school students who would receive intense training over three years before being placed into their own apartment or house. Assistance will investigate potential contaminants, suspected primarily to include lead in dry wells and sumps.

- A two-story, mixed-use development, intended to architecturally reflect the heritage of Portland's African-American culture, is planned to include 25 to 35 mixed-income apartments, ground-floor retail, and commercial space. Financial assistance to assess underground storage tank and asbestos contamination will reduce overall project expenses, improving feasibility.
- Assessment assistance is supporting the King Neighborhood Association's efforts to create a park on a city-owned 3,125 square-foot lot. The vacant site, once home to a single-family house, has arsenic and lead levels above that allowable for residential soil.
- A now vacant 11,000 square-foot parcel is proposed for administrative offices and processing center for Cloudburst Recycling Inc. The project would allow this existing, 25-year Northeast business resident to stay in its neighborhood and expand. Assistance will further cleanup efforts after a preliminary site assessment indicated petroleum hydrocarbon contaminants.
- Delta Sigma Theta Sorority Inc. intends to redevelop a 15,000 square-foot former service station site with two, two-story buildings totaling 27,000 square feet with space for retail, community service meeting rooms and day-care facilities, as well as 23 senior housing units. Assistance will be provided to investigate suspected petroleum-related contamination.
- A family-style restaurant is proposed for a site now occupied by a warehouse, with previous uses known to include a gas station and "staging" area for a catering company. Environmental assessment assistance will reduce overall project expenses and improve feasibility.

Manufacturing Campus to New Community, Phoenix, Arizona

The MetroNorth Corporate Park development project revitalized 160 acres for a variety of commercial, industrial, and affordable housing uses. In 1990, Bull HN Information Systems, Inc., which manufactures wired circuit boards, photographic etching, and chip boards, was downsizing from 1,000,000 to 400,000 square feet, leaving underutilized land, aging and undesirable buildings, and contamination including TCE, cadmium/heavy metals in soils, underground storage tanks, asbestos, and PCBs. Dimension Financial & Realty Investments, Inc. (DFRI) purchased the property (formerly known as Deer Valley Computer Park) in two acquisitions during 1994 and 1996. DFRI, in cooperation with the City of Phoenix and the Arizona Department of Environmental Quality, designed a plan to revitalize the property which included remediating 80 acres and 750,000 square feet of contaminated buildings. Although ground water cleanup is anticipated to take 25 years to complete, ground water cleanup system design minimized risk and enabled the project to achieve a sizable occupancy base. In total, DFRI invested about \$200 million in renovation, new construction and infrastructure improvements.

Abandoned Rail Yards to In-fill Housing, Portland, Oregon

The Yards at Union Station is a 6.1 acre former rail yard and freight/passenger depot that has been redeveloped for residential use. The project meets a regional long-term commitment to fit

new development into existing urban areas as a way to stem sprawl and preserve outlying farm land and open space. The site, which had been abandoned for 15 years and contaminated with petroleum hydrocarbons, polynuclear aromatic hydrocarbons (PAHs), lead, arsenic and crude oil, was cleaned and redeveloped through a cooperative effort by GSL Properties, Inc., the Housing Authority of Portland, the Portland Development Commission, Walsh Construction Co. and AMEC Earth & Environmental, Inc. In keeping with the vision for the district, a new pedestrian bridge provides a safe and convenient connection from the central plaza over the railroad tracks to provide access to downtown and a transit mall. The centerpiece of the second phase is a central public open space (an elevated plaza) with new connections across a major thoroughfare and access to greenspace along a river that is an integral component of the City. Over \$2.5 million in environmental investigations enabled \$53 million in housing and infrastructure investment.

Old Landfill to New Golf Course, Houston, Texas

EnCap Golf LLC (Tampa, Fla.-based) is developing two golf courses, a 12,000 square-foot clubhouse, and a lighted driving range, on a 450 acre former landfill site. Qualities that attracted the golf course development company include a location in proximity to a large city, the landfill's resulting elevation changes and topographic relief, providing for a challenging golf game. Owner Browning-Ferris Industries Inc. operated the property as a landfill until roughly 20 years ago. EnCap is leasing the property for a 99-year term. The state of Texas issued an official no further action letter to BFI stating that the site has been adequately remediated. Most settlement and harmful gas production takes place early in the post-closure stage, and the landfill has a thick clay cap. All golf course features and improvements are above the old caps. Further, all the enclosed structures, including the cart barn, maintenance areas and clubhouse are built outside the landfill perimeter.

Environmental Insurance for Residential Development, San Diego, California

The City of San Diego's efforts to revitalize its waterfront, to include transforming the former San Diego Naval Training Center into an urban village that mixes new homes and businesses with recreational, cultural and educational facilities, is being furthered by a specialized environmental insurance policy purchased by the site's developer. McMillin Companies is the site's master developer and will implement the City's reuse plan for the Naval property over the next 10 years. The insurance policy, designed by ECS Underwriting (an XL Capital company), will protect both McMillin and the City of San Diego from potential environmental and financial liability during and following the property's redevelopment. Coverage includes third-party claims that may result from pollution conditions, or involves additional cleanup costs and legal defense.

Business, Retail and Residential Revitalization, Atlanta, Georgia

Winter Properties Inc. announced a comprehensive 5-year plan for environmental clean-up, renovation and new construction to revitalize about five city blocks (11 acres) in the Means Street area west of downtown Atlanta. The Means Street district is an area dotted with abandoned warehouses and dilapidated storefronts within walking distance of the Georgia Institute of Technology and CNN Center. The plan, totaling 500,000 square feet with an estimated cost of \$75 million, includes a 50-unit, eight-story loft apartment building; new office and retail space at Marietta and Boss Streets; a 150,000 square-foot office building atop an 817-space parking deck; and a half-acre park.

Abandoned Concrete Factory to Light Industrial, Indianapolis, Indiana

The City of Indianapolis took ownership of Spickelmier Industries' 6.7 acre abandoned concrete block factory in 1996. The site had been idle since the company went bankrupt in the early 1980s. An environmental assessment showed soil contamination by two underground storage tanks, as well as asbestos present in the site's buildings. Between October 1996 and May 1997, the city cleared debris from the site; removed the storage tanks, contaminated soil, and asbestos; and demolished the buildings. Contaminant identification, characterization and cleanup allowed the city to place the property on the market for private-sector redevelopment. When redevelopment is complete, the site (appraised just after cleanup at \$182,500) will be worth an estimated \$2.62 million and will employ 40-60 people at a 20,000 square-foot office light industrial and self-storage facility project. Altogether, new development at the site is expected to generate \$53,000 per year in tax revenue.

6. CONCLUSION

Reusing sites for new development can help reduce suburban sprawl, maintain open space, and reduce the cost of extending roads and infrastructure. The reuse of property is essential to inner ring cities which typically have little vacant land for growth. While there is an urgent need to recycle lands, the real estate market has not typically recognized such sites as a viable commodity. Although actual contamination at a site may be minimal, legal liabilities impede properties from being cleaned up and reused.

Several factors are now converging to create a market for contaminated property. There has been a realization among federal, state and municipal governments, as well as local community groups, that idle or underused property can negatively impact the economic fabric of an affected community. The redevelopment of polluted sites has rightly become a political ideal in cities across the country. Concurrently, innovative technology and advanced toxicology models are yielding cost-effective cleanup methods, thus improving the financial feasibility of site reuse.

Given the public benefits to be gained, there is a clear role for government to provide a cooperative climate for the Brownfields market. Many cities and states have launched "investor friendly" policies to address liability, cleanup and financial concerns. States, cities and towns across the country are recognizing the need to turn environmental liabilities into community assets and are successfully recycling used property. Their successes are creating a model for other communities to adopt and modify for their own success.

