

Benefits of Brownfield Redevelopment in Minnesota



2018

Minnesota Brownfields

Minnesota Brownfields is a 501(c)(3) non-profit organization. Our mission is to promote the efficient cleanup and reuse of contaminated land as a means of generating economic growth, strengthening communities, and enabling sustainable land use and development. For more information visit www.mnbrownfields.org.

This report was made possible with funding from the Minnesota Pollution Control Agency and the McKnight Foundation.



McKNIGHT FOUNDATION

Table of Contents

Introduction	2
Brownfields in Minnesota	4
Economic Benefits of Brownfield Redevelopment	5
Community Benefits	8
Environmental Benefits	10
Redevelopment Opportunities	11
The Importance of State Brownfield Funding	12
Conclusions and Recommendations	14

Original Illustrations:
Anna Cich

Writing Credits:
Anna Cich
Hava Blair
Joe Mahowald
Martha Faust

Minnesota's growing population and economy have transformed the state in recent years. Historically, industrial and economic advancement have pushed outward to undeveloped and suburban land, leaving thousands of idle and contaminated properties, known as brownfields, vacant across the state.

Unattended brownfields threaten environmental and public health, burdening surrounding communities, economies, and ecosystems. These contaminated and abandoned properties solidify economic disparities by driving out local businesses and afflicting neighboring areas with health risks related to contaminated air, water, and lack of recreation. Further, brownfields often depress property values and act as physical barriers between neighborhoods. The successful cleanup and redevelopment of brownfields has potential to strengthen Minnesota's communities, making them economically and environmentally sustainable. This report presents the economic, environmental, and social benefits of reintegrating brownfield sites into Minnesota's economy and communities.

Introduction

The United States Environmental Protection Agency (EPA) defines a brownfield as

“real property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant.”¹

Brownfields exist in a number of forms: as abandoned industrial sites, gas stations, dry cleaners, landfills and any other industrial or commercial sites where prior uses introduced contaminants into the environment. Investigating and cleaning up brownfield sites for development requires more time and money than the development of greenfield sites. Greenfields are properties outside the urban core, attractive to developers because land costs are lower and because undeveloped greenfield land does not require the same investigation, cleanup, and preparation as previously developed land.

In 1992, Minnesota passed the Land Recycling Act, becoming the first state to establish statutory authority for qualifying voluntary parties to obtain legal protections from state Superfund cleanup liability.² Since then, many of Minnesota’s most visible brownfield sites have been remediated and repurposed.

A History of Superfund and Brownfield Legislation

In 1980, Congress passed the federal Comprehensive Environmental Response, Compensation and Liability Act (CERCLA). This legislation allowed the Environmental Protection Agency (EPA) to utilize federal funds to clean up contaminated land and to hold property owners liable for the release of hazardous waste. The Minnesota Legislature passed a related act in 1983, the Minnesota Environmental Response and Liability Act (MERLA), which amended the original federal act with liability protections. Though this provision began to address liability concerns, developers’ fears of pre-existing contamination paralyzed the real estate market in the developed, metropolitan core and initiated a market shift outward away from the core. Contaminated urban properties became idle and persistent sources of contamination and blight nationwide.

MERLA and its amendments in the late 1980s and early 1990s advanced brownfield legislation by establishing technical assistance, resources, and guidance for brownfield redevelopment. Statutory amendments to MERLA during this time period designated degrees of contamination; encouraged voluntary investigation, cleanup, and redevelopment of brownfields; and clarified legal protection options for non-responsible parties.³ In 2002, Congress passed a third amendment to CERCLA, the Small Business Liability Relief and Revitalization Act, more commonly known as the Brownfields Act. The act limited the liability of neighboring property owners and prospective purchasers of brownfields, clarified the defense of innocent landowners, and authenticated relationships between the EPA and MPCA for coordinating contamination assessment and cleanup on local and federal levels.

Current findings point to the economic power of brownfield redevelopment in the short term. A national study of resident-owned properties within 2.07 kilometers (1.2 miles) of brownfield sites suggest that every dollar of EPA funds invested in a property translates to a two to seven-fold increase in property tax after just one year.⁴

State and Regional Assistance for Brownfields

Today, technical assistance and funding are available from state agencies to facilitate the various phases of brownfield redevelopment. The Minnesota Pollution Control Agency (MPCA) Brownfield Program includes the the Voluntary Investigation and Cleanup (VIC) Program and Petroleum Brownfields Program (PB). The VIC and PB Programs provide technical assistance and liability assurance to facilitate the investigation, cleanup, transfer, and redevelopment of brownfield sites.

The Minnesota Department of Agriculture (MDA) is the lead state agency for the investigation and cleanup of contamination from agricultural chemicals. Staff in the Agricultural Voluntary Investigation and Cleanup (AgVIC) Program provide technical assistance and liability assurance letters for agricultural chemical contamination sites. Some financial assistance for investigation and cleanup activities at agricultural contamination sites is available through the Agricultural Chemical Response and Reimbursement Account (ACRRA).

The Minnesota Department of Employment and Economic Development (DEED) administers funds for the investigation and cleanup of sites with contaminated soil or groundwater. In awarding grants for brownfield cleanup, DEED prioritizes projects that address public health threats, increase local tax base, create jobs, and foster the social health of their surrounding communities.⁵ Minnesota has additional state and regional resources for brownfield clean-up and redevelopment. These include the Metropolitan Council Tax Base Revitalization Account (TBRA) grants, the MPCA's Targeted Brownfield Assessment Program, and county programs such as the Environmental Response Funds in Hennepin and Ramsey Counties, and the Redevelopment Incentive Grant Program in Dakota County.⁶

Federal Assistance for Brownfields

The EPA provides federal brownfield assessment, cleanup, and revolving loan funds to local project stakeholders interested in redevelopment. The EPA also provides technical information on brownfields financing. The EPA Brownfields Program collaborates with other EPA programs and partners at the federal and state levels to provide a variety of important resources that can be used for brownfields activities.⁷

An estimated 10,000 contaminated sites remain in Minnesota, along with their associated health threats, environmental damages, economic consequences, and blight.⁸ While unaddressed brownfield sites can harm communities, a number of successful redevelopment projects in Minnesota have demonstrated the significant and enduring benefits that brownfield redevelopment

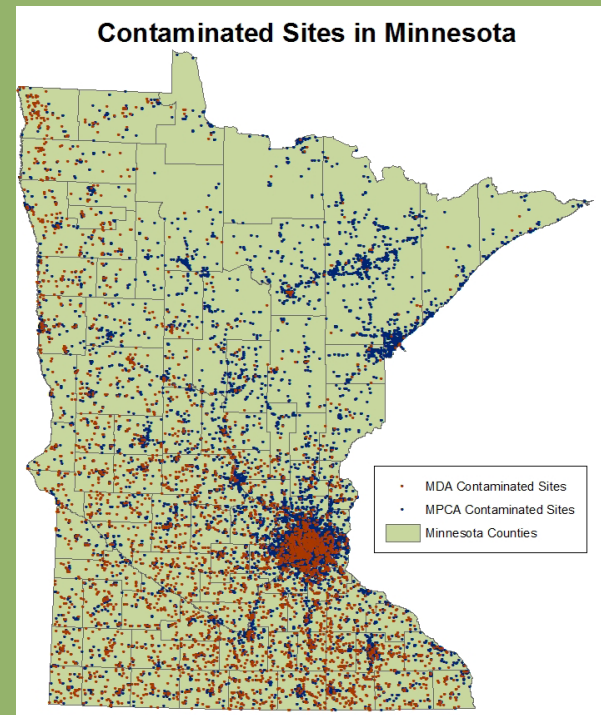
- Job creation
- Local economic growth and investment
- Revitalization of tax base
- Efficient use of existing infrastructure
- Neighborhood revitalization
- Property value increases
- Reuse of existing commercial properties
- Reduced threats to public health
- Air and water quality improvements
- Reduced urban sprawl and land conservation
- Opportunity to increase development density

Brownfields in Minnesota

More than 450,000 brownfields exist throughout the United States.⁹ Minnesota has made significant progress in brownfield cleanup and redevelopment since the late 1980s, but more work remains to be done.

Demand is strong for the MPCA's Brownfield Programs. In 2017, the MPCA enrolled 370 new sites totalling 2,265 acres in the VIC and PB Programs. As of January 2017, brownfield cleanup has been completed on 5,600 MPCA VIC sites and 4,100 MPCA PB sites.¹⁰ Over the lifetime of the VIC and PB programs, MPCA estimates that the combined programs have helped return approximately 91,238 acres of land back to productive use.¹¹

Despite Minnesota's brownfield cleanup and redevelopment successes, the MPCA estimates that approximately 10,000 brownfields or potential brownfields sites in Minnesota remain.¹² Minnesota's brownfields are concentrated in the state's urban and industrial centers but also exist in smaller communities and rural areas. Identified sites range from small corner gas stations with leaking underground storage tanks to large abandoned industrial complexes with plumes of contaminated groundwater migrating off-site. Map 1 on the right shows the distribution of such brownfield sites throughout Minnesota.



Map 1: Contaminated Sites in Minnesota, 2016

Cartographer: Kathrene Garcia

Sources: Minnesota Pollution Control Agency, Minnesota Department of Agriculture, Minnesota Geospatial Commons, ESRI

Benefits of Brownfield Cleanup and Redevelopment

The benefits of brownfield redevelopment extend far beyond the removal of contaminants. Redevelopment increases a region's property values and tax base, encourages the creation of local businesses and new jobs, eliminates environmental threats to public health, promotes environmental justice, restores community vibrancy, and limits urban sprawl while protecting natural and agricultural resources. Redeveloped brownfields typically utilize existing public infrastructure and compact development strategies that streamline transportation and energy consumption. Furthermore, the success of redevelopment projects can lead to secondary developments and fuel the economic resurgence of surrounding areas.

When brownfield sites are redeveloped...

- New businesses open, bringing new jobs and allowing the retention of existing jobs.
- Property values increase, expanding the local tax base and attracting further development.
- Connectivity within communities is improved. Public transit, biking, and walking options grant accessibility to non-drivers.
- Urban sprawl slows, preserving agricultural land, natural habitat, and carbon-sequestering green spaces.
- Community revitalization catalyzes further cleanup and redevelopment.

2018 Brownfields Milestones:

30 Years of VIC: In 1988, the the Property Transfer/Technical Assistance Program was established at the MPCA. This program is now known as the Voluntary Investigation and Cleanup Program (VIC) and provides important technical assistance and liability assurances to brownfield sites in Minnesota.

2018 BUILD Act: The Brownfields Utilization, Investment, and Local Development (BUILD) Act passed with the FY2018 Omnibus Package, re-authorizing the U.S. EPA Brownfields Program for the first time since its authorization expired in 2006.

Economic Benefits

Economic development is a central policy goal in most brownfield programs and one of the most visible and measurable benefits of remediation and redevelopment. Brownfield redevelopment enables job creation and retention, increased private investment, tax base revitalization, and efficient use of existing infrastructure. Additionally, redeveloped brownfields benefit surrounding properties by attracting new businesses, often leading to further economic development and tax base expansion. Collectively, these benefits contribute to economic competitiveness at the local and regional level, providing a substantial return on public investment.

Job Retention and Creation

Brownfield redevelopment helps communities create and retain jobs. These vacant properties offer opportunities for new business activity, instilling new life in neighborhoods and economies. DEED reports that projects funded through its Contamination Cleanup and Investigation Grants from 1995 to 2017 retained 24,724 jobs and created 24,766 new jobs.¹³ Grants awarded during DEED's 2017 grant rounds will support projects that add 2,213 jobs to Minnesota's economy.¹⁴



\$38

Average amount of private investment leveraged for each \$1 in grant funding from DEED ¹⁵

Leveraging Private Investment

By offsetting the costs and liabilities associated with redeveloping contaminated property, public investment makes brownfield sites financially viable for private developers. The majority of investment in brownfield redevelopment comes from private sources that can power the economic resurgence of a community. The EPA reports that its brownfield grants have leveraged \$24.71 billion in public and private investment, nationally, since the program's inception in 1995.¹⁶ Minnesota DEED reports that its 22 years of awards from the Contamination Cleanup and Investigation Grant Programs have leveraged a total of \$6.8 billion in private funding in Minnesota alone.¹⁷ On average, every dollar in grant funding provided by DEED leverages \$38 in private investment, demonstrating the power of this public investment.¹⁸

Oxbō West 7th Street Mixed Use Project, St. Paul



Previously the site of four abandoned businesses, the 1.2 acre Oxbō site is now host to 191 residential units, 11,500 square feet of ground-level retail and restaurant space, and an underground parking facility. Property value at this location has increased by approximately \$46.4 million, coinciding with a 91% real estate tax increase. The tax base has grown by \$585,000. The project has spurred momentum for further development in St. Paul's West 7th Street neighborhood.

Project priorities included creating a livable community, energy and resource efficiency, reduced automobile dependence, and creative density. Oxbō created 50 full time equivalent jobs for the community. The site is walkable to central St. Paul, with destinations such as the Xcel Energy Center, the RiverCentre, the Science Museum, and the Ordway Center.

Tax Base Expansion and Revitalization

By placing previously abandoned and undeveloped lots on the tax roll, brownfield redevelopment often results in increases to the local tax base. Residents benefit from job opportunities, new businesses and services, and increased utilization of existing infrastructure. As a result, consumer spending, state income tax, and sales tax revenue increase, and the vitality of a growing economy influences neighboring economies. The University of Wisconsin-Whitewater's Fiscal and Economic Research Center determined that the assessable tax base of an average remediated brownfield site in Wisconsin increased by \$3.4 million as a direct result of redevelopment, with an additional \$3.5 million increase from resounding effects on nearby properties.¹⁹

Tax base revitalization provides economic stimulation beyond what a state or federal subsidy alone could produce. In Minnesota, projects supported through DEED's Contamination Cleanup and Investigation Program have contributed an estimated total of \$114 million to the collective local tax base from 1995-2017.²⁰ In Hennepin County, Environmental Response Fund (ERF)-aided projects between 2003-2012 generated at least \$64 million more in incremental property taxes than they did prior to ERF involvement. The county estimates the associated property value increase to be an 11 to 1 return on investment.²¹

Removing Blight and Increasing Property Values

When brownfield sites are remediated and returned to productive use, benefits extend to the surrounding community. In their study of residential property values in the Twin Cities, Taylor, Phaneuf, and Liu (2016) found that residential property values neighboring an untreated brownfield site were depressed by about 8% compared to other nearby residential properties.²² Cleanup and redevelopment present an opportunity to recover these depressed property values. A national study of EPA-funded cleanups found that the cleanup and redevelopment of brownfield sites led to residential property value increases ranging from 5-11.5% within a 1.29 mile buffer.²³

Meeting Market Demand for Compact Development

As the population of new homeowners, aging baby boomers, and single homeowners grows, so does demand for walkable and connected neighborhoods and centrally located housing. Infill development on brownfield properties presents an ideal opportunity for centrally located neighborhoods that offer residents proximity to a city center, opportunities to walk and bike, and access to nearby goods and services. In addition, infill projects are more economically efficient to developers who collect more per square foot than they would outside the central city and do not need to accommodate as many automobiles.²⁴

As demand for housing in the Twin Cities increases, single-family detached residential development continues to consume the vast majority of developed square footage. Of recent residential development in the Twin Cities, single-family detached housing comprised 92% of the newly developed acreage but only 40.3% of the total number of units.²⁵ Infill development on brownfield sites provides the best opportunity to meet the region's goals for residential and economic development while responding to shifting market preferences for compact neighborhoods.

Economic Benefits of Density and Connectivity

Brownfield redevelopment reduces sprawl and the associated public infrastructure costs.²⁶ On average, greenfield developments use two to four times more land than denser infill redevelopments on brownfields. Infill redevelopment allows for the use of existing infrastructure, while development on greenfield sites requires the expansion of public sewage and water systems, utilities, streets, transportation facilities, schools, and parks. Suburban infrastructure is typically less dense - with increased costs per homeowner - than urban infrastructure. A study of potential nationwide cost savings from compact development found that developers and new building occupants could save almost \$200 billion in infrastructure costs over 25 years (2000 to 2025) if the projected 25 million new housing units built during that time followed smart growth principles and occurred in infill locations.²⁷

Cities have recently capitalized on the benefits of dense development by investing in cluster-based economic development strategies, grouping related businesses to streamline communication, innovation, productivity, and regional economic performance. Cluster-based development generates value; one study showed that values of office space in central business districts throughout the U.S. rose by 65% between 2009 and 2014, while values in suburban areas plateaued across the same window of time.²⁸

Community Benefits

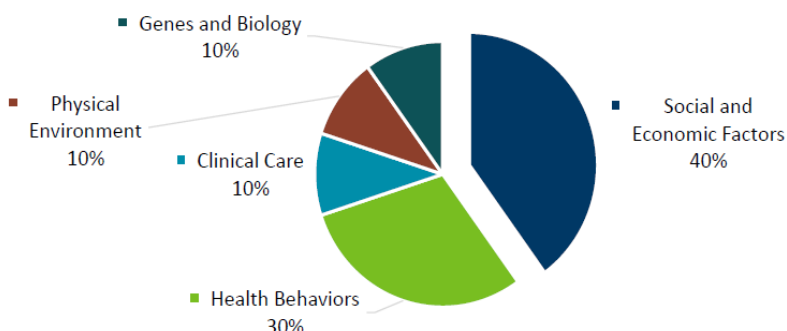
Brownfield cleanup and redevelopment makes Minnesota's communities safer, stronger, and more vibrant. Not only can brownfield reuse improve blighted areas and increase property values and investment, it improves public health and livability.

Brownfields and Public Health

The public health improvements that accrue from brownfield cleanup and redevelopment are significant and varied. Cleaning up and redeveloping brownfield sites eliminates potential health hazards by removing or remediating contaminated soil and groundwater. Communities with higher concentrations of brownfield sites suffer from adverse health outcomes including elevated blood lead levels, higher rates of asthma, and lack of access to open space and recreational opportunities.

Brownfield redevelopment represents a profound opportunity to influence the physical, social, and economic determinants of health. Taken together, the physical environment and socio-economic factors such as education, income, housing, and access to services comprise up to 50% of the factors that determine health (see Fig. 1).²⁹ Brownfield redevelopment can infuse a neighborhood with new jobs, provide affordable housing options, open up green space for recreation, and more. These are just a few examples of the dynamic interplay of brownfields, health, and redevelopment.

Figure 1. Determinants of Health



South Shore Lake Bemidji Response Action and Restoration, Bemidji



Through an extensive site excavation and ecological restoration, the City of Bemidji has transformed an unusable half-mile stretch of shoreline into a central feature of the community. The new park provides a public beach, an extension of the Paul Bunyan State trail, a rest stop for passing cyclists, and space for public education. With a location adjacent to the city, the restoration promotes the use of nearby restaurants, hotels, and the event center. Just 30 miles south of the Mississippi River's headwaters, Lake Bemidji hosts a healthy fish population, and the park now functions as a popular spot for fishing.

The City of Bemidji included residents in the planning process by opening the project to a 30-day public comment period, asking for input from the Leech Lake Band of Ojibwe Tribal Historic Preservation Office, and sharing updates via city council meetings and local news. Beyond its community impact, the restoration provides environmental improvements, including soil and water cleanup and the replanting of native shoreline vegetation as a buffer against erosion.

Environmental Justice

Brownfields, environmental pollution, and the associated public health risks are more concentrated in low-income communities and communities of color. This long-standing pattern is an issue of environmental justice. The MPCA defines environmental justice as the fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations, and policies.³⁰

Communities with an overburden of environmental pollution face additional barriers to brownfield redevelopment. Historically, these communities have faced discrimination, lack of investment, and inadequate opportunities for meaningful involvement in the political, planning, and environmental decisions that directly affect their lives. Brownfield cleanup and redevelopment in historically underserved communities can provide essential opportunities for increased physical, economic, and social health. It is imperative that such redevelopment prioritizes the needs of existing residents to avoid displacement through gentrification.

Brownfield Health Indicator Tool

To enable brownfield project planners to investigate and identify potential health risks, engage with project stakeholders, and prioritize the long-term health benefits of redevelopment, Minnesota Brownfields partnered with the Minnesota Department of Health (MDH) to create a Brownfield Health Indicator Tool, available on Minnesota Brownfields' website. The tool incorporates six categories that address health considerations in community planning, enabling residents to identify and prioritize their goals for improving health outcomes during the brownfield redevelopment process.

The Brownfield Health Indicator Tool helps communities leverage brownfields as catalysts for healthy change. For example, one of the six health indicator categories is "Context and Connectivity," addresses access to goods and services, incompatible uses, mixed use and density, parks and open space, and transportation. This category highlights how the combination of built environment and land use shapes the flow of people, money, and resources in ways that could either help or hinder opportunities for health. The tool features a series of questions to help communities understand how redevelopment decisions can meet their long-term goals and promote health.

Connectivity and Accessibility

Smart Growth America found that 40% of average household spending is comprised of housing and transportation costs.³¹ They therefore urge affordable housing and short commutes as a primary solution to poverty. Many brownfields are in ideal locations to provide affordable housing, shorter commutes, and multiple transit options. Furthermore, dense infill development on brownfield properties provides resources for aging adults to combat social isolation and cognitive issues associated with age, including opportunities for physical activity, daily face-to-face interactions, and participation in the local market.³² Market trends demonstrate a rising preference for these amenities among new homeowners and renters, too. By increasing the accessibility of Minnesota's neighborhoods, brownfield redevelopment encourages a more diverse and connected public realm.

Environmental Benefits

Brownfield cleanup and redevelopment translates directly to improved environmental quality. Brownfield sites often have soil and groundwater contamination at levels that threaten human health and the environment, based on EPA and MPCA guidelines. Brownfield cleanup translates to environmental benefits, including improved air quality, preservation of natural habitat and biodiversity, and reduced groundwater runoff.

The MPCA's Brownfield Program provides technical assistance and guidance to determine the appropriate cleanup and development strategy for brownfield sites. The MPCA works with owners and operators, community groups, and surrounding residents to develop a plan to remediate the site for future use while addressing past contamination issues.

Beyond the site-specific benefits of brownfield redevelopment, redeveloping brownfields can provide positive environmental impacts to surrounding communities by:

Reducing energy consumption and emissions: The density and urban location of most brownfield sites reduce the length of individual commutes and trips, resulting in energy savings and reduced emissions. Brownfield redevelopment reduces transportation-related vehicle miles travelled (VMT) per capita by 43-67% relative to conventional greenfield development.³³

Improving air quality: The reduction in VMT translates directly to reduced greenhouse gas and CO₂ emissions. A 2011 US EPA study of the Twin Cities area found a 32% reduction in carbon dioxide emission per capita for brownfield redevelopment sites compared to conventional development.³⁴

Reducing stormwater runoff: The EPA estimates that stormwater runoff is 43-60% lower in brownfield developments than their greenfield alternatives, particularly because infill does not require the same extent of road and utility infrastructure as conventional development.³⁵ A reduction in paved area results in a corresponding reduction in stormwater runoff.

Curbing sprawl and conserving land: Redeveloping brownfield sites instead of greenfields enables the conservation of undeveloped land and habitat at the urban fringe. In their paper "Growing Cooler: The Evidence on Urban Development and Climate Change," Ewing et al. site a "dual-effect" of infill development. Infill improves transportation efficiency while also preserving carbon-sequestering green space.³⁶ Furthermore, building practices, higher real estate costs, and parking requirements associated with infill development often encourage more efficient land use. Brownfield development typically requires a quarter to a half of the land for a given project compared to conventional greenfield development.³⁷



4.5

the average number of greenfield acres preserved per acre of brownfield redeveloped.

The University of Minnesota's Main Energy Plant, *Minneapolis*



The University of Minnesota recently renovated its “Old Main” steam plant, built in 1912 atop a filled limestone quarry, into the Main Energy Plant. In line with their goal to reduce carbon emissions by 50% by 2020, the university retrofitted the century-old steam plant to simultaneously produce steam heat and electric power.

The combined heat and power technology will allow for the retirement of two existing coal plants. When fully operational, it will save the University over \$8 million in annual heating and electricity costs and reduce CO₂ emission by 32,000 metric tons. Further, the plant has created 12 jobs at each stage of development - before, during, and after construction. This is one of few facilities nationwide to combine heat and power generation at a large scale, providing a model for future projects.

Providing urban green space: Brownfields can be repurposed for green and recreational spaces, including community gardens, pocket parks, and green infrastructure. Greening brownfields improves quality of life for residents and incentivizes private investment in the surrounding area. Park and recreation space currently comprises nearly 11% of the Twin Cities, the highest ratio of green space in the region's history.³⁸

Redevelopment Opportunities

Across Minnesota, opportunities exist for brownfield redevelopment that will stimulate economic growth, reconnect communities, and begin to reduce environmental threats. Assembling these small, disconnected, and available parcels can yield attractive, developable sites or corridors for future infill development.

Specific opportunities for brownfield redevelopment in Minnesota include:

Rice Creek Commons, Arden Hills: The former Twin Cities Army Ammunition Plant (TCAAP) site was a WWII-era ammunition factory with significant contamination of soil and groundwater, and was at one time the state's largest Superfund site. In 2012, Ramsey County purchased 427 acres of TCAAP property, renaming it Rice Creek Commons. The City of Arden Hills and Ramsey County are jointly implementing a master plan to convert the site into a mix of residential, commercial, light industrial, and other uses. The proposed plan calls for development to happen in five phases with the project to be completed in 2036. It is on track to be Minnesota's largest redevelopment project.³⁹

Former Ford Plant Site, St. Paul: The 135-acre site on the border of the Mississippi River and the Highland Park neighborhood is being called the City of St. Paul's "21st Century Community". Years of public input and planning have resulted in the Ford Site Zoning and Public Realm Master Plan. The plan lays out the site into 6 districts. Four of the districts are multifamily, residential areas and the other two are commercial/mixed use districts. The residential districts increase in density and height as they move east from the Mississippi River. Nearly a quarter of the 135-acre site will be greenspace, including a stormwater system. The Ford Site is nearing completion of remediation activities and is being marketed to national developers.⁴⁰

Renewable Energy Generation Facilities: As Minnesota diversifies its energy production, brownfield sites offer advantageous locations for renewable energy generation. Brownfield sites can improve project economics through reduced land costs and tax incentives specific to contaminated land, reduced project cycle times through streamlined permitting and zoning, and existing infrastructure. Former landfills and other industrial land are well-equipped for the development of mid to larger scale solar and wind generation operations and/or biomass refinery facilities. States such as Massachusetts are leading in conversion of closed landfills to solar production, providing a model for Minnesota to consider.⁴¹

Transit-Oriented Development: Defined as high-density, mixed-use residential and commercial development near transit stations, transit-oriented development (TOD) is often possible in areas with concentrations of brownfields, where neighborhood infrastructure and economy are already in place. In Minnesota, the Metropolitan Council's Tax Base Revitalization Account for TOD Grant Program funds site investigation, cleanup, and redevelopment of higher density mixed-use development projects close to major transit stops. TOD increases public transit ridership, and in turn increases funds available for building and maintaining healthy public transit systems. TOD residents, on average, take half as many car trips as non-TOD residents. And because of the reduced demand for parking in TODs, developers can build 20-33% more residential units and may be able to offer lower housing costs.⁴²

Cargo-Oriented Development: Cargo-oriented development (COD) aims to incorporate freight system transit with manufacturing and logistics businesses to consolidate, strengthen, and improve the efficiency of cargo delivery. COD also improves local economies by providing jobs. Consolidated freight systems improve public safety and the environment by reducing the footprint of cargo operations and enhancing the use of rail for cargo, which is more efficient than semi-trucks. The Minneapolis-St. Paul (MSP) region ranks as the 8th largest manufacturing region in the United States and COD can assist in making the MSP region more efficient and competitive.⁴³

The Importance of State Brownfield Funding

Brownfield sites pose complex fiscal challenges to potential developers, municipalities, and broader communities alike. The need for up-front capital to clean contaminated sites, paired with a shortage of loan availability and private equity investment monies, requires developers to seek public assistance. Government grants defray upfront cleanup costs, making brownfield projects financially viable. Loans for brownfield sites are often more difficult to obtain because lenders can be reluctant to take on the risk of contaminated properties. While public funding for brownfield revitalization in Minnesota exists, current programs are vastly over-subscribed, resulting in fewer financially viable redevelopment projects.

Grant funding is available from the EPA and through state and regional grant programs: the Minnesota Department of Employment and Economic Development's Contamination Cleanup and Investigation and Redevelopment Grant Programs, the Metropolitan Council's Tax Base Revitalization Account, and Hennepin and Ramsey County's Environmental Response Funds. All of these grantors are critical to the success of brownfield redevelopment projects. Public brownfield funding increases opportunities to:

- utilize idle and blighted properties
- increase the local tax base
- increase property values
- encourage further redevelopment in neighboring regions
- leverage further private investment

Spurring Development and Economic Growth Through Public Funding

Most brownfield projects using public resources – both nationally and in Minnesota – rely on a combination of funding sources to successfully clean up a site. Many redevelopment projects that take place on properties with a history of commercial or industrial use encounter contamination issues. The longer the history of commercial or industrial use, the greater the probability that a property will require some level of remediation. Private developers need sufficient return on investment to justify redevelopment activities and have limited ability to absorb the unpredictable added costs of completing environmental investigations and cleanups. Public-private partnerships have proven to be an effective strategy to spur development.

Public Funding in Minnesota

Public funding is an important catalyst for many brownfield clean-ups. Since 1995, DEED's Contamination Cleanup and Investigation grant programs have leveraged \$38 of private investment for every \$1 of grant funding, creating or retaining a total of 47,000 jobs throughout Minnesota, and increasing local tax bases by over \$1.14 billion.⁴⁴ The Metropolitan Council's Tax Base Revitalization Account and Hennepin and Ramsey Counties' Environmental Response Funds have enabled brownfield remediation and reuse while leveraging significant private investment.

Despite past successes, thousands of brownfields remain idle across Minnesota. There is potential for spurring further economic growth in Minnesota's communities by addressing these sites. These redeveloped parcels can create jobs, spur private investment, increase tax base, and revitalize communities.

Barriers to Capitalizing on Minnesota's Brownfield Opportunities

Funding for Minnesota's main brownfields grant programs has been volatile due to fluctuations in the state's economy and politics. The 2012 Minnesota Legislature ended the Hennepin and Ramsey County Environmental Response Funds for six months, only to reinstate the Funds in 2013 for the next fifteen years. Up to half of the Metropolitan Council's brownfield grant funds were earmarked to cover a transit operating deficit between 2009 to 2011. Meanwhile, DEED's Redevelopment Grant Program relies on annual State General Fund appropriations. The program is chronically oversubscribed, running out of funds in 2015 and again in 2017.

Despite the recent increase in funding and the reauthorization of the EPA's Brownfields Program, the funding of the EPA Brownfields Grant Program has been historically cyclical, peaking in 2009. There is intense national competition for EPA grants. Federal funding is now more uncertain than ever, making it critical that Minnesota's in-state brownfield grant programs are funded to meet demand.

Conclusions and Recommendations

Remediating and redeveloping brownfield properties supports Minnesota's future economic competitiveness, environmental sustainability, and public health. Revitalizing contaminated sites can improve economic vitality and environmental health at neighborhood, regional, and state levels. In the context of current budget constraints and social and environmental challenges, brownfield redevelopment provides an opportunity for Minnesota to ensure a strong economy, protect the environment, and provide a high standard of living for all Minnesotans – now and for generations to come.

We can ensure this future by:

- providing adequate appropriations for Minnesota's brownfield funding programs. Grant programs require consistent ongoing funding, and income obtained by Minnesota's voluntary cleanup programs (which assess a fee for services) should be used exclusively for the operation, expansion, and innovation of the voluntary cleanup programs.
- encouraging local governments to establish redevelopment policies and best practices. The Urban Land Institute's (Re)development Ready Guide is a proactive framework that provides clarity, transparency, collaboration, and efficiency to support thriving, sustainable communities.
- evaluating existing mechanisms that promote equitable brownfield redevelopment in areas with high concentrations of poverty and environmental justice issues. Ensure that community representatives have access to technical assistance and funding. It may be necessary to target new funding to areas throughout the state that do not otherwise compete well for traditional funding programs.
- ensuring that policies and incentives are responsive to changing market dynamics. Current opportunities include the the development of renewable energy on brownfields and innovative materials management practices.

Endnotes

1. U.S. Environmental Protection Agency (U.S. EPA) "Overview of the Brownfield Program" Available online: <https://www.epa.gov/brownfields/overview-brownfields-program> (November 17, 2017).
2. Haberman, Kenneth M. "Minnesota's Response to Brownfield Redevelopment Issues." *Environmental Practice*. 11 (4) December 2009. 301-310.
3. Ibid.
4. Sullivan, Karen A., "Brownfields Remediation: Impact on Local Residential Property Tax Revenue," *Journal of Environmental Assessment Policy and Management* 19.3 (September 2017).
5. Minnesota Department of Employment and Economic Development, "Contamination Cleanup and Investigation Grants Program" 2017 Annual Report (2017).
6. Metropolitan Council. "Tax Base Revitalization Account (TBRA)." Available online: [https://metro council.org/Communities/Services/Livable-Communities-Grants/Tax-Base-Revitalization-Account-\(TBRA\).aspx](https://metro council.org/Communities/Services/Livable-Communities-Grants/Tax-Base-Revitalization-Account-(TBRA).aspx) (2018).
7. U.S. Environmental Protection Agency, "State Brownfields and Voluntary Response Programs," Available online: <https://www.epa.gov/brownfields/2017-state-brownfields-and-voluntary-response-programs> (November 2017).
8. Minnesota Pollution Control Agency. "FFY2017 Annual Progress Report: MPCA Brownfields Program use of Section 128(a) State Brownfield Grant from the United States Environmental Protection Agency" (2017).
9. U.S. Environmental Protection Agency (U.S. EPA) "Overview of the Brownfield Program" Available online: <https://www.epa.gov/brownfields/overview-brownfields-program> (November 17, 2017).
10. Minnesota Pollution Control Agency. "FFY2017 Annual Progress Report: MPCA Brownfields Program use of Section 128(a) State Brownfield Grant from the United States Environmental Protection Agency" (2017).
11. Ibid.
12. Ibid.
13. Minnesota Department of Employment and Economic Development (DEED). "DEED Awards \$4.6 Million for Cleaning Up or Investigating Contaminated Sites." (July 25, 2017).
14. Minnesota Department of Employment and Economic Development (DEED) "DEED Awards \$5.57 Million in Cleanup Funding." (January 4, 2018).
15. Minnesota Department of Employment and Economic Development, "Contamination Cleanup and Investigation Grants Program" 2017 Annual Report (2017).
16. U.S. Environmental Protection Agency "Brownfields Program Accomplishments and Benefits: Leveraging Resources to Revitalize Communities." Available online: <https://www.epa.gov/brownfields/brownfields-program-accomplishments-and-benefits> (October 2017).
17. Minnesota Department of Employment and Economic Development, "Contamination Cleanup and Investigation Grants Program" 2017 Annual Report (2017).
18. Ibid.
19. Kashian, R. and Paull, E. "The Economic and Fiscal Impact of Wisconsin's Brownfields Investments." University of Wisconsin Whitewater Fiscal and Economic Research Center (2015).

20. Minnesota Department of Employment and Economic Development, "Contamination Cleanup and Investigation Grants Program" 2017 Annual Report (2017).
21. Hennepin County "Environmental Response Fund." Available online: <https://www.hennepin.us/business/property/environmental-response-fund> (2018).
22. Taylor, L. O., Phaneuf, D. J., Liu, X. "Disentangling Property Value Impacts of Environmental Contamination from Locally Undesirable Land Uses: Implications for Measuring Post-Cleanup Stigma" CEnREP Working Paper No. 16-019 (March 2016).
23. Haninger, Kevin, Lala Ma, Christopher Timmins, "The Value of Brownfields Remediation," National Bureau of Economic Research (2014).
24. U.S Environmental Protection Agency, "Smart Growth and Economic Success: Investing in Infill Development," Available online: <https://www.epa.gov/sites/production/files/2014-06/documents/developer-infill-paper-508b.pdf> (2014).
25. Metropolitan Council, "Growing Greener, Getting Leaner: Land Use in the Twin Cities Region," Available online: Metrostats <https://metrocouncil.org/Data-and-Maps/Publications-And-Resources/MetroStats/Construction-Activity/Growing-Greener,-Getting-Leaner-Land-Use-in-the-T.aspx> (June 2017).
26. U.S Environmental Protection Agency, "Air and Water Quality Impacts of Brownfields Redevelopment: A Study of Five Communities" (2011).
27. Smart Growth America, "Expanding the Economic Recovery to All Americans Through Smarter Growth: Recommendations for the Incoming Administration" Available online: <https://smartgrowthamerica.org/resources/expanding-the-economic-recovery-to-all-americans-through-smarter-growth/> (2016).
28. U.S. Environmental Protection Agency, "Smarter Growth and Economic Success: Investing in Infill Development." Available online: <https://www.epa.gov/sites/production/files/2014-06/documents/developer-infill-paper-508b.pdf> (2014).
29. Minnesota Department of Health. "Healthy Minnesota 2020 Update: 2017 Annual Report of the Healthy Minnesota Partnership. Available online: http://www.health.state.mn.us/healthymnpartnership/docs/annualreport_2017.pdf (March 2018).
30. Minnesota Pollution Control Agency (MPCA). "Environmental Justice Framework 2015-2018." (Dec 17, 2015).
31. Smart Growth America, "Expanding the Economic Recovery to All Americans Through Smarter Growth: Recommendations for the Incoming Administration" Available online: <https://smartgrowthamerica.org/resources/expanding-the-economic-recovery-to-all-americans-through-smarter-growth/> (2016).
32. Anzilotti, Eillie. "Our Aging Population Can Be An Economic Powerhouse--If We Let It" Fast Company Available online: <https://www.fastcompany.com/3068543/our-aging-population-can-be-an-economic-powerhouse-if-we-let-it> (March 3, 2017).
33. U.S Environmental Protection Agency, "Air and Water Quality Impacts of Brownfields Redevelopment: A Study of Five Communities" (2011).
34. Ibid.
35. Ibid.
36. Ewing, R., Bartholomew, K., Winkelman, S., Walters, J., and Chen, D with Barbara McCann and David Goldberg. "Growing Cooler: The Evidence on Urban Development and Climate Change," Urban Planning (2007).

37. National Association of Local Government Environmental Professionals and Northeast-Midwest Institute, "Unlocking Brownfields: Keys to Community Revitalization." (2014).
38. Metropolitan Council, "Growing Greener, Getting Leaner: Land Use in the Twin Cities Region," (June 2017).
39. 24. Norfleet, N. "State's biggest property makeover: Arden Hills ammo site to be redeveloped" StarTribune Available online: <http://www.startribune.com/alatus-says-it-will-rebuild-arden-hills-ammo-site-state-s-biggest-property-makeover-in-five-phases/476832753/> (March 14, 2018).
40. City of Saint Paul. "Ford Site Zoning and Public Realm Master Plan." Available online <https://www.stpaul.gov/departments/planning-economic-development/planning/ford-site-21st-century-community> (September 27, 2017).
41. Greenwalt, Megan. "Solar Renewable Energy Projects Provide Second Lives for Landfills." Waste360. Available online <http://www.waste360.com/solar/solar-renewable-energy-projects-provide-second-lives-landfills> (February 19, 2015).
42. Transportation Research Board "2008 Annual Report" The National Academies. Available online: http://onlinepubs.trb.org/onlinepubs/general/2008_TRB_Annual_Report.pdf (2008).
43. CNT "Cargo-Oriented Development" Available online: <https://www.cnt.org/cargo-oriented-development> (2018).
44. Minnesota Department of Employment and Economic Development, "Contamination Cleanup and Investigation Grants Program" 2017 Annual Report (2017).
45. Urban Land Institute "(Re)Development Ready Guide" Available online: <https://minnesota.uli.org/advisory-services/redevelopment-ready-guide/> (2018).