United States Environmental Protection Agency

BUILDING VIBRANT COMMUNITIES: COMMUNITY BENEFITS OF LAND REVITALIZATION

In 1998, EPA awarded its first Brownfields Job Training grants. JFYNetWorks in Boston, Massachusetts, used this funding to train community members to become environmental technicians.

Foreword

In 1993, the U.S. Environmental Protection Agency (EPA) launched a small pilot program called "brownfields" with an initial grant of $200,000 to Cuyahoga County, Ohio. Through this pilot, a seven acre site was assessed and cleaned up, 141 jobs were created, and two sites were created for healthy new businesses. It also sparked a movement to clean up and redevelop idled, underused, abandoned, and vacant properties throughout the country.

Today, the EPA Brownfields Program has changed the landscape of America's communities and transformed once vacant properties into beacons of hope for many economically disadvantaged neighborhoods.To date, the program has provided more than 2,500 grants totaling more than $600 million in direct funding to communities, which leveraged an additional $12 billion from other sources to assess, clean up and reuse brownfields. This investment has yielded more than 54,000 jobs – many in disadvantaged communities. While these statistics are impressive, there is also a broad range of additional community-wide benefits that can result from the redevelopment and reuse of brownfield properties.

This report highlights these other community benefits and potential redevelopment opportunities to create more vibrant, healthy, safe, and sustainable communities. Specifically, the report highlights the potential use of brownfields for agriculture and food systems, arts and culture, housing and mixed uses, and other community and civic uses such as greenspace, schools, and health care facilities. Of course, these benefits and the Brownfields Program itself could not occur without our numerous federal, state, municipal, nonprofit, and private sector partners, who we highlight throughout the report. The purpose of this report is to help us all rethink, make new connections, and broaden our idea of the resources available to clean up brownfields properties, revitalize our communities, create new economic opportunities, and improve our nation's environment and health.

I understand that in today's economic conditions, brownfield tools are needed more than ever to clean up and redevelop brownfield properties for sustainable uses that create local jobs. EPA has to meet that challenge by working and listening to local communities, fostering public-private partnerships, and providing flexibility in our resources. I look to you to challenge us as to how EPA and the Federal Government can assist you to help revitalize local communities.

Mathy Stanislaus
EPA Assistant Administrator for Solid Waste and Emergency Response

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BUILDING VIBRANT COMMUNITIES: Community Benefits of Land Revitalization

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Brownfield Community Case Studies and Partners Featured in this Report

Since 1993, the number of brownfields partnerships has grown exponentially to include hundreds of federal, state, municipal, nonprofit, and private sector organizations, as well as hundreds of communities across the nation. This report provides a portrait of just a few of the many diverse partners, innovations, and resources that are enhancing community benefits through brownfields cleanup and revitalization.

THE TRUST FOR PUBLIC LAND

GIRL SCOUTS OF AMERICA

International Council of Shopping Centers

Agency for Toxic Substances and Disease Registry (ATSDR)

EPA Programs

Groundwork USA

National Governors Association

Environmental Council of the States (ECOS)

Centers for Disease Control (CDC)

Community Colleges

NATIONAL PARK SERVICE

Habitat for Humanity

American Planning Association

Hospitals

National Institute of Environmental Health Sciences (NIEHS)

Army Corps of Engineers

National Vacant Properties Campaign

BOY SCOUTS OF AMERICA

Private Investors

The Urban Institute

Center for Public Environmental Oversight (CPEO)

Atmospheric Administration (NOAA)

National Oceanic and

U.S. Conference of Mayors

U.S. Department of the Interior

National Association of Realtors

Smart Growth America

National Endowment for the Arts (NEA)

American Society of Landscape Architects

National Environmental Justice Advisory Council (NEJAC)

Community Partners for Affordable Housing

National Conference of Black Mayors

National Association of Local Government Environmental Professionals (NALGEP)

City and County Economic Development Agencies

National Trust for Historic Preservation

Private and State Universities

Local Initiatives Support Corporation (LISC)

U.S. Chamber of Commerce

National Forum for Black Public Administrators

State and Tribal Environmental Programs

Market Umbrella

International Economic Development Council

Northeast-Midwest Institute

U.S. Department of Commerce

National Association of Development Organizations (NADO)

Lenders

U.S. Economic Development Administration (EDA)

U.S. Green Building Council

Association of State and Territorial Solid Waste Management Officials (ASTSWMO)

National and Community Foundations

NATIONAL BROWNFIELD ASSOCIATION

U.S. Department of Housing and Urban Development (HUD)

International City/County Management Association (ICMA)

U.S. DEPARTMENT OF AGRICULTURE (USDA)

Introduction

An abandoned factory, a boarded up corner gas station, a run down mill. In communities across the country, we see brownfields of every shape and size. It is hard to miss the graffiti-laced walls, the broken windows, the caved in roofs. It is equally hard to dismiss the unknown environmental contaminants and health hazards brownfields can pose.

Degradation often spreads beyond the boundary of one property to blight an entire neighborhood or community. Surrounding streets become stagnant and unsafe. Concerns about safety and crime rates increase. Residents and businesses move out. Property values decline. Retirees, residents, business owners, and employees that remain behind may need to go further to access goods or services. The inspiration and creativity that formed the neighborhood's original vibrancy can fade away.

Fortunately, more than two decades ago, civic leaders began working to reclaim their communities. The nation embarked on an experiment in environmental protection, involving aspects of environmental justice and economic development, to address the growing challenge of cleaning up and revitalizing brownfield properties. Environmental justice advocates and citizen groups rallied to reverse the decline of neighborhoods. Cities, states, nonprofit organizations and tribal nations responded, and public and private developers saw a market opportunity. EPA began a pilot program to provide seed money to catalyze this movement, and other federal agencies retooled their funding and assistance to aid the cause.

Brownfields revitalization has been successful—not just at individual properties, but block-by-block and beyond. There are hundreds of examples where the clearing of environmental concerns at one distressed property paved the way for the property to return to productive reuse. We see dozens of examples where blight is reversed with regeneration—where one property's reuse spurs community-wide revitalization. Sidewalks and streets are improved. Trees and flowers are planted. New lighting is installed. A community center gets refurbished. Businesses and residents return to the area. The ripple effects can spread through the community—fear and crime rates fall, access to services and healthcare improves, property values increase, a tax base is restored.

What is it that distinguishes one property cleanup and reuse success from another, and what stimulates change well beyond its original property lines? What creates a safer environment and an economic resurgence while creating a healthier and more sustainable community? Answering those questions is the next part of the brownfields experiment. Will you be one of the next generation of brownfield leaders?

We hope this report motivates and inspires citizens, developers, urban planners, non-governmental organization (NGO) leaders, academics, policy makers, business owners, and community development, environmental, and health officials to explore the possibilities. This report highlights the important, yet sometimes less tangible benefits that brownfields redevelopment can bring to your community.

"A brownfield is a grain of sand around which the pearl of community develops."

Clark Henry – Brownfields Coordinator, City of Portland, Oregon

Redevelopment is underway at Portland, Oregon's South Waterfront

Introduction continued...

This report provides only a small sampling of the many brownfield community collaborations—through case studies and several anecdotal stories as well as photos and external research—to give you a sense of what is possible. We provide resource links and information about innovative partnerships to spur your imagination.

Join those communities that have reinvigorated their land and built vibrant, healthy, sustainable communities.

In addition to supporting and becoming involved in brownfields revitalization, you can strengthen your community right now by doing the following:

- Participate in a community garden
- Volunteer with a local organization
- Improve your home's curb appeal
- Start a new business
- Support your local farmers market
- Meet your neighbors
- Organize social activities on your street
- Attend community events and meetings
- Walk to your local park
- Use public transportation
- Celebrate your community's history
- Work with community leaders on a blighted property
- Speak up for your neighborhood
- Save a historic building
- Help to create community greenspace
- Participate in cultural activities
- Support activities at local schools

1. Successful Brownfields Redevelopment

Brownfield properties are diverse. They come in all sizes—from a fraction of an acre to hundreds of acres. They are located in urban, suburban and rural locations. Some properties may have little to no contamination, while others require cleanup to ensure protection of the community and environmental health. Contamination at these properties—whether perceived or actual—can cause them to lay idle, underused, abandoned or vacant; this can lead to blight and disinvestment in neighborhoods or communities.

This section provides a brief overview of the U.S. EPA's Office of Brownfields and Land Revitalization (OBLR) Brownfields Program and the broader community benefits that can occur from brownfields revitalization. This section also highlights the importance of community involvement and incorporating elements of sustainability to ensure these broader community benefits.

EPA Brownfields Program

In many cases, brownfield properties remain vacant or idle because of a lack of funding to assess or clean up the property. In response, EPA's OBLR provides grants to communities, states and tribes to assess and clean up brownfields. OBLR also provides grants to train local residents in the technical skills necessary to become environmental professionals that obtain jobs in local brownfields redevelopment projects near them.

As shown in Figure 1, approximately 2,500 grants have been awarded across the country since 1995. In addition, these grants total more than $600 million in direct funding to communities, enabling these communities to leverage an additional $12 billion from other sources to assess, clean up and reuse brownfields.

In addition to the funding and support provided by EPA's Brownfields Program, there are numerous state, tribal, local, private and nonprofit partners that provide funding and technical support to assess, clean up and revitalize brownfield properties.

EPA Brownfields Program Grants

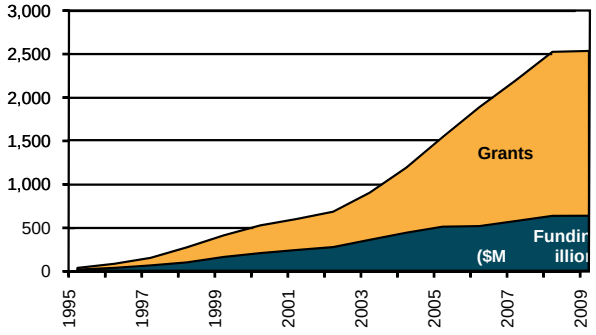


Figure 1: Since 1995, the number of Brownfields grants awarded yearly has increased tenfold.[1]

A **brownfield** is a property affected by real or perceived contamination that inhibits redevelopment.

Land revitalization refers to the process of assessing a property for contamination, cleaning up contamination (if found), and returning the property to productive use.

EPA's Brownfields Program has enabled:

- Assessment of more than 14,000 properties
- Cleanup of nearly 400 properties
- Creation of more than 54,000 jobs
- Employment of 3,300 Job Training graduates[2]

Data current as of 8/24/2009

"It offers a sense of community pride... if people feel they have some input and control in a project like this, that is planting a seed for ownership in the future."

Tito Molino – West End Community Development Council, Bridgeport, Connecticut

As shown in Figure 2, the EPA Brownfields Program and its partners have leveraged almost $12 billion and created 54,000 jobs.

EPA Brownfields Grants Leverage Jobs and Funding

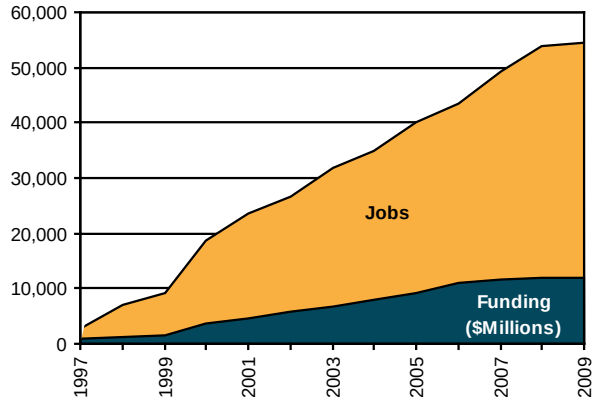


Figure 2: As more brownfields are redeveloped, more jobs are created for the community.[3]

Working together, brownfields revitalization partners across the country have made a substantial impact in terms of dollars invested and leveraged, properties cleaned up and jobs created.

In addition to these measures of success, a variety of broader community beliefs have been realized. Often, these benefits are linked to brownfields revitalization projects that successfully engage participation of the community before and during the redevelopment process.

Engaging Communities

Brownfield projects that receive government funding require public notice and community involvement. These communities reach out to and involve stakeholders before, during and after receiving funding to ensure success. Community members and local stakeholders can learn, share information and shape brownfields cleanup and redevelopment while also fostering a new generation of community leaders.

By creating a dialogue among all stakeholders in a brownfields project, community engagement enhances the final reuse of the property and the long-term success of the project. Individuals and organizations also build lasting working relationships and stronger community ties. EPA also recognizes that community engagement is a vital process to help alleviate environmental justice concerns for citizens in economically disadvantaged areas and give them a voice in their community's future.

Early community engagement may also identify reuses preferred by local stakeholders to fill key market gaps or provide needed services. For example, residents may identify vital, but overlooked, services in the community—such as a full service grocery store, park, bank, senior housing or pharmacy that may not otherwise be developed.

Successful community engagement results in stakeholders identifying new ideas that gain community support, minimize conflict and reduce delays in project completion. All these factors can save time and money for the property owner and developer, and assure the long-term success of the project for the entire community.

Participating in the local decision–making process empowers and inspires residents to continue their public participation and address issues in their community beyond the original brownfields project. A community's youth is often a huge source of untapped creativity that may provide a fresh perspective on ways to address brownfields. For example, the Girl Scouts of Nassau County, New York developed the Brownfields Buster patch, which is earned by learning about brownfields in the community and suggesting ideas for redevelopment. Youth involvement and engagement can also create a new generation of community leaders.

The brownfields redevelopment process allows public, community and private sector stakeholders to forge new partnerships, and access new resources to support their project. This builds civic capacity and helps strengthen bonds among neighbors, creating a more tightly knit community.

This increased civic capacity provides the groundwork for future neighborhood collaboration and revitalization of the community. Learning about and participating in local decision making can inspire residents to remain engaged and address other important issues in their community.

The following case study of Market Creek Plaza in San Diego, California highlights a highly innovative community engagement process that included a community development initial public offering.

The more people and viewpoints represented in the brownfields redevelopment process, the more information communities have to identify the best property reuse. At a Greensburg, Kansas, design charrette, residents work together to develop a site plan.

Community engagement experts recommend that the process:

- Include the promise that the public's contribution will influence the decision
- Communicate the interests and meets the process needs of all participants
- Seek out and facilitate the involvement of those potentially affected
- Involve participants in defining how they participate
- Provide participants with the information they need to participate in a meaningful way
- Communicate to participants how their input affected the decision[4]

U.S. EPA CARE Program

EPA's CARE Program helps to develop community based solutions to environmental issues. CARE grant recipients engage all members of the community and create local partnerships to access a broad range of viewpoints and services so that the entire community decides how best to deal with its environmental issues. Find out more at *www.epa.gov/care.*

Through the CARE Program in Marquette, Michigan, volunteers collect e-waste to prevent improper disposal or dumping

To find tools for public involvement, visit *www.epa.gov/publicinvovlement/Involvement.htm*.

For more information about the Jacobs Center for Neighborhood Innovation, visit *www.jacobscenter.org*, and for more information about the project, go to *www.marketcreekplaza.com*.

Neighbors attend a Market Creek planning meeting

Case Study: Market Creek Plaza - San Diego, CA

Neighborhood group develops model for community ownership of neighborhood assets

In an area once known as the 'Four Corners of Death' in the distressed Diamond Neighborhoods of San Diego, California, an abandoned aerospace factory was transformed into a community hub called Market Creek Plaza. This mixed use center has become a community focal point, incorporating cultural traditions, arts and entertainment—with a grocery store, restaurants, retail shops and essential services.

A major component of the project's success was its in-depth community engagement process. Resident working teams partnered with the Jacobs Center for Neighborhood Innovation to plan, design, build, lease and now own and operate the Plaza. Planning began with 800 neighborhood surveys, numerous living room meetings, and several community forums to assess what the community needed. Top on the list was a major chain grocery store, followed by restaurants, entertainment and living-wage jobs.

Local residents participated in eight working teams to influence all elements of the project, from community outreach to building design. Residents were in charge of developing and implementing outreach and communication strategies. This helped build capacity among resident leaders as they mobilized the larger community to participate in the process.

The Community-Development Initial Public Offering (CD-IPO) was launched in 2006, making it possible for community residents to purchase ownership shares in Market Creek Partners, LLC. To date, the community owns 40 percent of Market Creek Partners, LLC; the ultimate goal is for 100 percent community ownership of this project. Owning a part of this innovative project generated a sense of pride and accomplishment throughout the community.

The reuse of this brownfield strengthened community ties and established Market Creek Plaza as a community gathering place where neighbors can meet and enjoy the fruits of their labor. Market Creek Plaza is now a catalyst for local involvement and other redevelopment projects. This process serves as a model for other communities and demonstrates the value of partnership and the power of eliminating blight to transform a neighborhood.

Benefits

- Involved 3,000 adults and youth and eight design teams in the planning process
- Filled cultural, retail and grocery market gaps
- Awarded $7.9 million dollars in contracts to minority- or women-owned businesses
- 415 community members and organizations now own a part of the development
- Created 200 new jobs; 70 percent of them filled by residents
- Restored 1,400 linear feet of wetlands
- Generated $42 million in economic activity in 2008
- Paid a full 10 percent annual return to Diamond Community Investors in 2007 and 2008

Enhancing Sustainability

EPA supports innovative projects that incorporate sustainability into brownfields cleanup and redevelopment. Sustainability is often defined as meeting the needs of the present without compromising the ability of future generations to meet their own needs.[5] However, since the late 1980s, human resource use has exceeded the earth's capacity to regenerate those resources.[6] This means that globally, we are compromising the ability of future generations to meet their needs.

To reverse this trend and live sustainably, we must reduce our impact on the environment, even as we improve our social and economic conditions. While this may be challenging, it is helpful to think of sustainability as a process and not as an endpoint. Many individual decisions to enhance sustainability will combine to reduce our impact on the environment and benefit the entire community. The case studies presented throughout this report highlight sustainable features incorporated into each property's redevelopment.

Cleaning up and revitalizing brownfields inherently enhances sustainability. Through brownfields revitalization, property that was once contaminated is cleaned up. Property that was previously underutilized due to the perception or existence of contamination is restored to a higher and better use. And greenfields that may otherwise have been developed are left untouched. There are also approaches that can be integrated into brownfields revitalization to improve sustainability.

Many brownfields partners and other organizations provide technical assistance and guidelines to promote more sustainable designs and features into redevelopment projects. For example, the Sustainable Sites Initiative is a joint effort by the American Society of Landscape Architects, the Lady Bird Johnson Wildflower Center and the United States Botanic Garden that establishes a set of guiding principles for sustainability.[7] This framework helps to show sustainability as a process for enhancing human welfare while reducing harmful effects to the environment.

Many communities across the country revitalize brownfields to remove environmental contamination and contribute to long-term sustainability. Some communities have made their cleanup process more sustainable by reusing and recycling construction

For more information on the Sustainable Sites Initiative, please go to their Web site at *www.sustainablesites.org.*

At community gardens across the country, rain catchers improve stormwater management and double as public art. At one community garden, children help to install a rain catchment structure.

Photo courtesy of Ashley Kyber

Did you know?

Greenfields and undeveloped land serve as a carbon sink, offsetting more than 10 percent of our nation's greenhouse gas emissions. Protecting these areas through brownfields redevelopment is critical for addressing and responding to climate change.[8]

Built on a former brownfield in Newark, California, Ohlone College Newark Center for Health Sciences and Technology uses sustainable elements such as photovoltaic solar panels, geothermal heating and cooling, and recycled materials in its eco-friendly campus

and demolition materials, while others make the property's reuse sustainable by constructing green, energy efficient buildings. In 2008, EPA initiated 16 Brownfields Sustainability Pilots to explore ways to enhance sustainability by providing technical assistance for achieving greener assessment, cleanup and redevelopment approaches to these 16 communities across the country.

There are many ways to enhance sustainability during the brownfield revitalization process:

- Green remediation practices that maximize the net environmental benefit of the cleanup
- Comprehensive site planning that considers the best use for the property, given its location and condition
- Recycling construction and demolition debris
- Reusing existing buildings, infrastructure, fixtures and equipment
- Using renewable and recyclable construction materials
- Building new structures or retrofitting existing structures to be energy and water efficient, such as those that are Leadership in Energy and Environmental Design (LEED®) or ENERGY STAR® certified
- Integrating green roofs
- Improving stormwater management through green infrastructure
- Integrating native landscaping
- Utilizing the property for environmentally focused reuses such as transportation oriented development, renewable energy generation, wetlands preservation or organic farming

EPA Brownfields Sustainability Pilot Profile: Houston, Texas - Solar Energy and Green Jobs

The City of Houston's EPA Sustainability Pilot helped the city transform a former 300-acre landfill into a solar power farm. Not only will this transformation remove blight in a neighborhood just 10 minutes from downtown Houston, it will revitalize the area, meet a portion of the city's electrical needs, and bring new green jobs. EPA provided a technical, regulatory, and financial analysis of this planned project, which showed the solar farm to be technically and environmentally feasible. This analysis will help Houston make the landfill redevelopment project as sustainable as possible when creating and operating the renewable energy facility. To see how these practices can be translated to your community, visit *www.epa.gov/brownfields/sustain_plts/index.htm.*

The proposed solar farm
Photo from Google maps

Community Benefits

As a brownfield is revitalized, a variety of benefits can be realized throughout a community. A ripple effect can occur that brings community benefits for health, the environment, the local economy, a community's civic capacity, neighborhood identity, and neighborhood infrastructure. Figure 3 shows how the ripple effect from brownfield revitalization becomes a catalyst to spread community benefits beyond the original cleanup and property.

Community Benefits of Brownfield Revitalization: A Ripple Effect

Figure 3: The ripple effect of brownfields investment: Communities use brownfields funding to assess and clean up their properties if needed. Through the property's revitalization, jobs may be created, contamination may be reduced, blight may be removed, surrounding property values may increase. This may cause a ripple effect of additional community benefits.

"To go fast, go alone.
To go far, go together."

African Proverb

In St. Paul, Minnesota, the immigrant Hmong community celebrates the groundbreaking of a Hmong funeral home on a former brownfield. A funeral is one of the most sacred traditional rites in Hmong culture, and this redevelopment project provides the community a place to honor its culture and heritage.

From brownfields to soccer fields - Atlanta youth have a new place to exercise. Photo after (above) and before (below) redevelopment.

Health and Environmental Benefits

Cleaning up a contaminated site reduces exposure to contaminants not just onsite, but also offsite by halting the migration of contamination into nearby air, soil and water. To date, nearly 400 properties have been cleaned up using EPA Brownfields funding, helping to improve the health of the surrounding communities and environment.[9] The following highlights the many health and environmental benefits that are associated with brownfields projects:

- **Exposure to contamination is reduced or eliminated.**
- Brownfields reuse is **a proven smart growth approach that has been linked with a reduction in vehicle miles traveled** which in turn improves air quality and reduces associated health risks such as asthma.[10] Reusing a brownfield in an area with existing development can **enhance neighborhood walkability** by providing additional services close to other amenities.
- Reusing brownfield property also **eases development pressure on greenfields**, which are critical for maintaining healthy watersheds and providing forestry products.
- Pedestrian-friendly developments **provide places for residents to interact, enjoy the outdoors and exercise**.
- Sustainable redevelopment projects that include a green building, permeable pavement, or additional trees can **reduce energy demand and heat island effects while improving stormwater management** and reducing certain air pollutants.
- Using sustainable construction techniques, equipment or materials to **reduce material consumption, water and energy use** also improves the community's environmental health.
- Health can be improved if a walking trail, supermarket or community health clinic is located on a former brownfield site; this can improve **access to exercise, fresh food or health care and services** that may not have previously existed.
- Turning a former brownfield into some form of greenspace—such as restored habitat, wetlands, parks, forests or trails—**can improve the aesthetics of the area as well as physical and mental health**. Residents can have a place for physical movement and access to nature, which provides them with physical and mental health benefits.
- **Planting gardens provides access to healthy food** and reduces stress as they provide a calm, restorative feeling shown to improve health.[11] These less tangible quality of life characteristics are often what define a community as a great place to live.
- **Planting trees can improve the feel of communities while absorbing and sequestering carbon**, regulating temperature, and absorbing rain or snow to reduce runoff.[12] Trees provide shade for buildings during the summer, which can reduce energy bills by 15 to 35 percent compared to streets that are not shaded.[13]

Economic Benefits

Brownfields cleanup and redevelopment is a primary driver for attracting investment and business to communities that may otherwise be overlooked. With environmental uncertainties addressed, property owners face reduced liability and new incentives for property redevelopment. The successful transformation of one property may encourage interest and development in the surrounding area.

Brownfields redevelopment also demonstrates significant potential to generate new green jobs for environmental professionals who assess and clean up properties. EPA's investment in communities through its Brownfields grants helped to leverage more than 54,000 jobs related to property assessment, cleanup and reuse.[14] The following highlights many of the other economic benefits associated with brownfields projects:

- Some types of brownfield reuse can **create jobs that increase local income and decrease poverty rates** in the surrounding area, thus providing financial stability to residents. For example, the Johnstown, Pennsylvania Redevelopment Authority used its EPA Brownfields Assessment grant to transform a former automotive part store into a bioscience facility, creating 27 new well-paying jobs. Johnstown has been successful in transforming additional neighboring properties into productive reuses, restoring an entire area and bringing clean industry and jobs back to the city.
- Certain types of brownfield reuse can also **create green jobs**. Architecture, design, engineering, construction, agriculture-related, renewable energy manufacturing, environmental services and consulting, and energy efficiency companies that locate on a former brownfield can all provide green jobs.
- All types of **new jobs create a multiplier effect: workers spend more money in the area in which they work, further boosting the local economy**. In addition, numerous studies have shown the direct link between property improvement and the increase in surrounding property values.[15] Those who have been invested in the neighborhood for years can benefit as their homes and businesses increase in value. As property values and incomes increase, the local tax base likewise increases, potentially translating into improved services for the community.

Capacity Building Benefits

Enhancing the capacity building of individuals and public, nonprofit and private organizations provides long-term benefits to the community beyond a single brownfield project. Improving social connectivity gives neighbors the chance to get to know one another and lays the foundation for future local collaboration. Many of these benefits have already been described on pages two through four of this report. Other benefits include:

- Opportunities to **foster environmental justice**

Green jobs are positions in agriculture, manufacturing, research and development, administrative, and service activities aimed at alleviating the myriad environmental threats faced by humanity.[16] Jobs associated with brownfield revitalization (e.g., assessment and/or cleanup) are considered green jobs, as are the jobs created through the site's reuse if they are aimed at addressing environmental threats.

Residents participate in a Winston-Salem, North Carolina Job Training Program funded by an EPA Brownfields grant

Photo courtesy of Tim Brinkley

Community capacity building provides an opportunity for all people, regardless of culture or income, to have equal access to the decision making process.

Engaged communities build the social capital to:

- Reduce crime
- Improve public health
- Improve educational opportunities
- Promote prosperity and economic growth[17]

In Greensburg, Kansas, residents plan their new green city after it was destroyed by a tornado

by leveraging new investment and jobs in distressed communities. It also improves the local environment and provides a stronger degree of protection from environmental and health hazards.

- Some brownfields redevelopments can provide **opportunities for enhanced education**. In Shelby, Montana, a Brownfields Cleanup grant will allow a former high school to be redeveloped as a community center, giving residents a place for social interaction and education. The basement of the building will also serve as a Head Start and alternative adult education facility to serve a wide range of educational needs. Those who are educated and better informed are then able to contribute back to their community.

Neighborhood Benefits

The redevelopment of a single brownfield property may be what a community needs to revitalize an entire neighborhood. Physical improvements to a redeveloped brownfield property can help redefine a neighborhood and re-establish a sense of place. In some cases, brownfields redevelopment can prompt neighbors to improve their properties and create a positive ripple effect throughout community. Other neighborhood benefits include:

- **Providing market-rate and/or affordable housing is crucial to ensuring a stable, healthy and accessible community**. Brownfields redevelopment has been linked with increased rates of home ownership, which has, in turn, been linked to an increase in characteristics such as educational achievement, civic participation and well-being. Brownfields often provide ideal locations to integrate housing options close to other services, which helps reduce vacancies, improve health and strengthen neighborhoods. Redevelopment also provides housing opportunities for those providing local goods or services such as teachers, police officers or nurses.

- **Residential development that is coupled with public open spaces (e.g., parks, plazas) provides an opportunity for residents to socialize and share information** and learn about their community. Simple landscape and building improvements beautify a neighborhood, generate resident pride and make it a more attractive destination for activity and entertainment.

- **Decreasing blight and increasing social connections can help improve community safety**; there are fewer abandoned buildings where crime can take place and there is more monitoring by those who feel connected to and invested in their neighborhood.

Greensburg, Kansas: Linking Disaster Recovery and Sustainable Planning

The City of Greensburg, Kansas (population 1,500) and Kiowa County were destroyed by a tornado in 2007. Since this tragedy, the state and local government are rebuilding a more sustainable future for the community. As the community is being reconstructed as a LEED® Platinum City, the entire neighborhood is being revitalized. Learning from this example, other communities are linking disaster recovery efforts with the need to create more sustainable communities, including several in Iowa and others in Texas impacted by flooding, hurricanes and extreme weather events.

2. Brownfields Reuse Creates Community Benefits

Turning an underused property into a community asset creates a range of health, environmental and economic benefits.

This section of the report highlights four major brownfield reuse themes that provide widespread benefits to communities. These four categories are: agriculture and food system uses, arts and culture uses, housing and mixed uses, and community and civic uses. Case studies for each of these reuses illustrate many of the community benefits, and examples of organizations or resources that can enhance brownfields cleanup and revitalization projects are also highlighted.

Agriculture and Food System Uses

Perhaps nothing connects us more to our local environment, the seasons and our community than the food we prepare and eat daily. Agriculture and food systems have long played a dominant role in shaping our economy, job opportunities, energy use and where we live.

The emergence of an industrial and manufacturing economy caused dramatic demographic shifts as jobs were created in urban areas. During the post World War II economic boom, the number of smaller farms declined greatly as large-scale industrial agricultural met an increasing demand to boost crop yields for expanding domestic and export markets.

The rising environmental movement in the 1960s and 1970s saw the beginnings of small localized efforts to promote healthy, sustainable, locally grown and organic foods. Many people rediscovered the environmental benefits of smaller sustainable farms, organic farming and local gardens. The recent energy crises also highlight the connection between food prices and fuel prices because of the fertilizers, pesticides, energy intensive farm equipment, and food transportation system needed to support large-scale agriculture. Today's agriculture and food system accounts for approximately 19 percent of all fossil energy used in the United States.[18]

The growing awareness of sustainability and healthier foods has piqued public interest and created a desire to integrate food systems and agriculture back into local communities. This interest is reflected in the rising demand for land in urban areas to support local food production, community supported agriculture (CSA) and farmers markets. This movement to support and strengthen local farms and reintroduce food production into neighborhoods provides increased demand for land near populated areas. Brownfields redevelopment is a prime opportunity to support agriculture and food systems because many brownfields are small parcels of land within urban areas that can be used as community food or flower gardens, urban farms and farmers markets.

The need for locally produced food may be particularly pressing in "food deserts," where physical or economic barriers prevent access to healthy food.[20] In these areas, there are often no full service grocery stores and few healthy food

EPA Brownfields-funded agriculture projects include:

- Bellow Falls, VT, Farmers Market
- Glens Falls, NY, Farmers Market
- New Britain, CT, Urban Farm
- Sacramento, CA, Community Garden
- Saginaw, MI, Farmers Market

Farmers Market in Bellows Falls, Vermont

Did you know?

- Food transportation costs add $113 billion to the cost of U.S. food.
- 120 million tons of carbon dioxide are emitted from transportation of U.S. food annually.[19]
- Developing local food, including those on former brownfields, reduces the environmental impacts from long distance transportation of food.

choices available to residents. Figure 4 tracks EPA Brownfields, Superfund, Resources Conservation and Recovery Act (RCRA), and Landfill Methane Outreach Program sites against food deserts in the City of Baltimore that could be potentially used for food production projects. Several EPA Brownfields grantees used grant monies to assess and clean up properties for use as farmers markets or community gardens.

Across the country, there are many organizations working to provide access to locally grown food. In Detroit, Michigan, an organization called Urban Farming helped turn vacant land into gardens. After testing the soil to ensure there was no contamination, the Linwood and Gladstone Garden, one of the largest community gardens in the city, was planted and is maintained by local volunteers to provide free vegetables to community members and local food banks.

There are countless additional examples throughout the country of reusing properties to grow and provide better access for residents to acquire food locally. Another example, "Plant a Row for the Hungry,"[22] is one of many efforts to enlist home gardeners in growing additional vegetables for donation to the local food bank.

While not every property may be suitable for an agricultural or food systems reuse, many small urban parcels can serve as community food or flower gardens, urban farms, farmers markets, and provide additional environmental benefits. The following case studies illustrate that brownfields can help improve the health of a community.

EPA-Tracked Sites Present Opportunities to Address Food Deserts

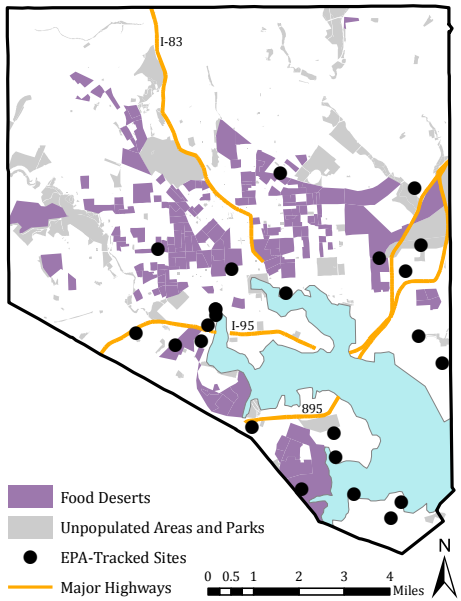


Figure 4: In Baltimore, Maryland, many EPA-tracked sites are located in or nearby food deserts. Redeveloping these sites for a food production or sale may alleviate food desert conditions.[21]

Soil Sampling is Critical in Food Production Projects

All projects involving food production and gardening should conduct Phase I environmental site assessments, soil sampling, and testing before planting. Tests for pH, organic content and key nutrients are needed as well as potential environmental contaminants. Alternatively, urban and brownfield gardeners may wish to grow above ground hydroponically or in greenhouses.

It is important to ensure that soils are not only safe, but adequate for growing. Soils can be reconditioned for food production through the addition of organic materials, leaf mulch, or food waste compost to increase water absorption for better stormwater management soil biodiversity, and carbon sequestration.

Case Study: Urban Oaks Organic Farm - New Britain, CT

Urban farm helps to create a safe, livable community

The City of New Britain, Connecticut, laid the foundation for transforming one of its poorest, most dangerous neighborhoods by revitalizing a brownfield as an urban farm and community garden. Urban Oaks Organic Farm, one of the first urban organic farms in the United States and the largest urban organic farm in the Northeast, was developed in the violent crime-ridden North Oak Street Neighborhood.

In 1997, an EPA Brownfields Assessment grant and an EPA Cleanup grant in 2003 provided the initial financial backing to assess and clean up the three-acre urban brownfield property. In addition to the EPA funding, the project used funds from the U.S. Department of Housing and Urban Development, the Connecticut Department of Economic and Community Development, the City of New Britain, and local foundations.

The farm serves as a source of employment for the local community—many of the farm's six full-time and ten part-time employees are residents in the North Oak Street neighborhood. Additionally, each summer, Urban Oaks invites 10 local teenagers to participate in a 10-week, paid position that offers hands-on organic and sustainable farming educational training. The farm provides ongoing education for residents and school groups in organic gardening methods, sustainable agriculture, non-toxic farming techniques, composting, and other environmentally-friendly farming techniques.

To put this knowledge to practical use, Urban Oaks created a one-acre, 30-plot neighborhood garden where gardening

space, tools, seeds, water and technical assistance are all provided at no cost to gardeners. These activities provide unique educational opportunities for underserved inner city residents to learn about farming and gardening techniques.

New Britain Chief of Police and life-long resident, William Gagliardi, explained that, "prior to the cleanup and redevelopment of the urban brownfields located within the North Oak Street neighborhood, violent crime was at an all time high, the area had more gangs per capita then any where else in U.S. Many long-time residents left the neighborhood—while others stayed locked in their houses. Today, the gang problem has been greatly reduced—violent crime is approaching zero percent, while overall crime has been reduced by 25 to 33 percent—which has greatly changed the character of the neighborhood. Folk who left the neighborhood are moving back and new people are moving in, residents feel safe walking to Urban Oaks or to visit a neighbor." This multi-year brownfields revitalization project helped restore the fabric of the city and improve local safety.

Benefits

- Cleaned up a three-acre urban brownfield
- Provides walking access to affordable, locally grown organic produce
- Provides hands-on agricultural training and education to local youth allowing them to connect with the land
- Catalyzed neighborhood redevelopment to reduce crime rates
- Provides a safe community gathering space that improves social connectivity

"Shopping at Urban Oaks is a social thing. Urban Oaks is like a scene from decades ago, the customers know all the farmers, everyone greets each other, and the food is fresh and chemical free—besides, I like supporting the local economy."

Local resident and patron of Urban Oaks

"It is one of the ironies of urban agricultural development that these former industrial sites, often called "brownfields" are in fact some of the best choices for locating a new urban agricultural business."

www.greensgrow.org

Flowers for sale at Greensgrow Farm

Case Study: Greensgrow Farm - Philadelphia, PA

An urban brownfield grows green

Established in 1997, Greensgrow opened on a former industrial lot in a Philadelphia, Pennyslvania, neighborhood, which is a mixed use residential-commercial-industrial area. Greensgrow operates on the one-acre brownfield site as a hydroponic garden, starting with growing lettuce for restaurants. Greensgrow has blossomed in the 12 years since its conception, with the property now hosting raised beds of organic soil filled with numerous vegetable and herb plants, a farm stand and a nursery. Shoppers can pick up peppers, squash, figs, eggplants, lettuce, tomatoes and many kinds of herbs just to name a few.

In the 1980s, a former steel galvanizing plant closed, leaving behind significant soil contamination and health concerns in the community. In 1993, the EPA Superfund program stepped in to address the property. The building and contaminated soils were removed from the property, leaving only the concrete slab foundation. Greensgrow selected hydroponic gardens help to protect human health and the environment and preserve the concrete slab foundation site cap. Once the local Community Development Corporation bought the property, they rented it to Greensgrow for $150 a month, a rent they still pay each month. This low rent shows the commitment to provide necessary beneficial services to the surrounding low-income Kensington community. Now with more than 10 employees and volunteers at the property, Greensgrow continues to reach more people in the community, as well as the Philadelphia region.

Local residents are able to walk to the garden to purchase fresh and locally grown produce and plants, creating a true community feel in a space which was once tainted by industrial uses. Greensgrow achieved their mission of connecting city residents with better food options that are easily accessible and grown locally. Greensgrow not only grows its own vegetables and herbs onsite, but also offers venues for the products from other local growers. Additionally, a nursery on the property offers a wide range of plants and seedlings and their beehives produce fresh honey for consumers. While Greensgrow offers a wide selection of products onsite for community members, some of the fresh, locally grown produce also is delivered to local Philadelphia restaurants.

As the garden has grown over the years, so has its offerings onsite. The staff offers special educational sessions to teach about many aspects of gardening including composting lessons, bee-keeping, organic gardening and green roofs. The staff's most recent endeavor was to start making biodiesel fuel out of old frying oil retrieved from their local restaurant customers during produce deliveries.

Benefits

- Cleaned up a one-acre brownfield
- Provided access to fresh, local, and affordable produce and plants to low-income community
- Provided education opportunities on sustainable agriculture
- Demonstrated environmental stewardship in business management practices

Community Benefits of Agriculture and Food System Uses

Improved Access to Nutritious and Healthy Foods

Community gardens allow residents to grow fresh, local and often organic food, leading to a better diet and lifestyle that can improve public health and reduce disease. Gardening can also increase physical activity, something of great need in a nation where nearly two thirds of urban residents do not have access to a local park or open space for recreation.[23] Lack of access to nutritious and affordable food is a fundamental public health and quality of life issue that can be corrected through brownfield revitalization.

Increased Home and Property Values

Research in Philadelphia concludes that community gardens and planting trees can increase or stabilize the value of neighboring properties or rental income.[24] This provides an additional economic incentive for garden creation and tree planting reuses as well as creating produce, flowers and greenspace. In St. Louis, Missouri, areas surrounding gardens experience increased home values;[25] even those who do not directly use the property are benefiting from its effective reuse.

Improved Retail and Small Business Opportunities

In many urban areas across the county, and particularly in low-income neighborhoods, many studies conclude that there is a lack of full-service grocery stores with fresh food. Residents in these neighborhoods are less likely to own a vehicle and must rely on the food retail locations that are within walking distance. Instead, residents often go to convenience stores which tend to offer foods of lower quality and lower nutritional value and often at higher prices. Brownfields revitalization can play an important role in providing viable locations for grocery stores or small fresh food markets, filling urban market gaps.

Improved Community Space

Gardens and farmers markets provide community gathering spaces and are local economic engines, allowing residents to interact and enjoy their neighborhood, while also helping support local farmers and the local economy. Communities interested in starting a farmers market may be eligible for U.S. Department of Agriculture (USDA) grants to assist efforts. In addition, state legislation to support local agriculture has been proposed in a number of states to meet market demand. A county in Iowa has enacted policies to rebate 100 percent of real property taxes to farmers who convert to organic production, and to support local and organic food purchases in county institutional settings.

Improved Access to Local Gardening and Food Production

Increasing seed sales and membership in gardening groups signal growing interest in agricultural activities.[26] Today, 71 percent of American households engage in some type of lawn or gardening activity[27] and there are an estimated five million organic gardeners.[28] Web sites such as Sharing Backyards link people with unused yard space to individuals looking for a place to grow food. More information can be found at *www.sharingbackyards.com.*

Improved Opportunities to Meet Demand for Organic Food

Since the late 1990s, U.S. organic production has more than doubled, and organic food sales have more than quintupled. More than two-thirds of U.S. consumers buy organic products at least occasionally, and 28 percent buy organic products weekly, according to the Organic Trade Association. Organic products are now available in nearly 20,000 natural food stores and nearly three quarters of conventional grocery stores.[29] More information can be found at *www.ers.usda.gov/briefing/organic/demand.htm*.

Community or neighborhood gardens have been shown to help reverse urban decline by:

- Increasing occupancy rates
- Increasing income
- Decreasing poverty rates[30]

Somerville, Massachusetts, used their Brownfields Cleanup grant to help create a community garden

Lynchburg Grows, an urban farm in Lynchburg, Virginia, helps to show the importance of sustainable agriculture and a healthy lifestyle. On the farm, successes abound: since 2006, they harvested 1,500 pounds of fresh produce of which 700 pounds was donated to a local soup kitchen; and they have seen annual revenues increase from $8,000 in 2004 to $250,000 in 2009.

Lettuce grows in one of the many Lynchburg Grows greenhouses

Resources*

USDA Assessment and Soil Testing Resources
Communities looking to start community gardens can benefit from the tools and resources available through the USDA Cooperative State Research, Education, and Extension Service. It can provide information on agriculture, natural resources, community and economic development, soil testing services, and crop recommendations. Find your local office at *www.csrees.usda.gov/Extension/index.html*.

EPA Targeted Brownfields Assessment (TBA) Funding
Communities can seek TBA funding and community Brownfields grants to support property assessment and cleanup before gardening or farming. Further information can be found at *www.epa.gov/brownfields/tba.htm*.

Community Food Assessments (CFAs)
Many urban and rural areas have conducted CFAs to determine access to healthy and affordable foods. A CFA may prove useful to identifying redevelopment opportunities in brownfields communities. To learn more, visit *www.ers.usda.gov/Publications/EFAN02013/*.

USDA Agricultural Marketing Service
USDA's Agricultural Marketing Service administers several grant programs for local organic initiatives and starting farmers markets. Identify grant opportunities at *www.ams.usda.gov/AMSv1.0*.

Food Security Guidelines
Food security and food insecurity are the terms used to describe a multi-disciplinary approach to identify whether individual families, the elderly and communities have access to food that they can afford. Communities interested in improving food security in concert with brownfield revitalization efforts can find information at *www.ers.usda.gov/Browse/view.aspx?subject=FoodNutritionAssistance*.

Sustainable Food and Agriculture Guidelines
The Eat Well Guide, an online tool developed by the Kellogg Foundation and diverse organizations working to advance sustainable agriculture practices and food systems, can be found at *www.eatwellguide.org*.

Quantifying the Benefits of Farmers Markets
Communities can quantify the economic benefits of their farmers markets by using a tool called SEED (Sticky Economy Evaluation Device) developed by Market Umbrella, a New Orleans-based nonprofit organization. SEED and other tools that may be of interest to communities seeking to expand local food systems and support small, local producers can be accessed at *www.marketumbrella.org*.

Supplemental Nutrition Assistance Program
This program helps low-income people and families buy the food they need for good health. More information at *www.fns.usda.gov/fsp*.

The Johns Hopkins Center for a Livable Future
The Center works to develop and communicate information about the interrelationships among diet, food production, environment and human health. One of the Center's current projects is the creation of a geographic information system (GIS) Food System Map of Maryland. Additional Resources can be found at *www.jhsph.edu/clf*.

*The resources presented throughout this report are provided to supplement the content of the report. The information provided is not meant to infer or imply any endorsement or sponsorship by EPA. The list of resources is by no means exhaustive, but is intended to provide further assistance and information to brownfield communities.

Arts and Culture Uses

Arts and culture play an integral part in shaping a community's identity. Passed down from generation to generation, a community's culture is woven into its social fabric and reflected through its stories, dance, food, language, literature, art, film, festival and religious practices. Cultural locations and historic buildings serve as places to connect, interact and reflect.

Cities across America are now reexamining and reinvesting in arts and culture as an additional strategy to revitalize communities and neighborhoods. By creating cultural hubs, art businesses are helping cities redefine themselves, draw tourists and attract public and private investment. In 2008, 81 million Americans participated in an art or culture event.[31] The nonprofit arts and culture industry supports 5.7 million U.S. jobs and generates $29.6 billion in government revenue.[32] Cultural resources are considered an important reason why businesses relocate to new communities, and a presence of strong arts amenities can help recruit employees. Communities that recognize the importance of public art and support their local art and craft community to create or restore attractive spaces help build community character and a sense of aesthetic appreciation.

Increasing interest in revitalizing distressed communities through arts and culture can be reflected in restoring historic properties and abandoned buildings close to the urban core. Brownfields redevelopment can provide a prime opportunity to support and strengthen arts and cultural activities since many properties are located within urban areas.

Municipalities across the country have also enacted ordinances that require a certain percentage of building costs be used for public art, showing the important link between incorporating art in redevelopment projects. Philadelphia, Pennsylvania, the first city to do so, requires that no less than one percent of a building's construction budget be used for art. The City of Philadelphia is also one of the largest employers of artists, due in part to its mural arts program which created 2,800 murals on the vacant walls of buildings through the city—enlisting community arts in the re-envisioning of their neighborhoods.[33]

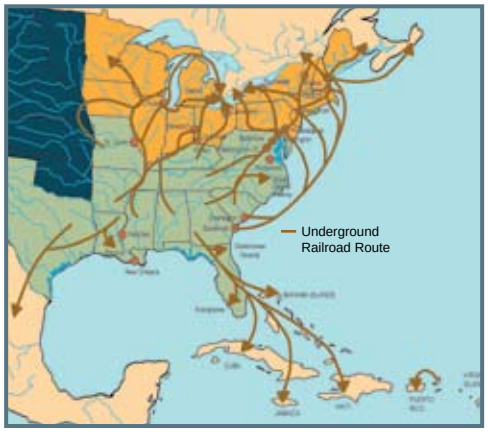
Community-based arts and cultural activities foster creativity, self-expression and discovery of different cultures, and a new way of experiencing community and building social and civic capital. Several Brownfields grantees have helped preserve historical properties and prepare them for reuses such as venues for festivals and performances, work space for local artisans, and museums that express and celebrate a community's heritage. The following case studies highlight several brownfield communities with successful arts and cultural development.

EPA Brownfields-funded arts and culture projects include:

- Baltimore, MD, American Visionary Art Museum
- Charlotte, NC, Design Center
- Louisville, KY, African American Heritage Museum

The Museum of Glass in Tacoma, Washington, was built on a former brownfield

The National Park Service is coordinating the preservation of Underground Railroad sites across the country to educate the public about their significance. The Mary Meachum Freedom Crossing is a former brownfield, and is now recognized as a major historical treasure.



Brownfields redevelopment helps to honor the importance of Underground Railroad routes

Case Study: Mary Meachum Freedom Crossing - St. Louis, MO

Community preserves ties to the Underground Railroad

The Mary Meachum Freedom Crossing was an under-used city-owned property that was accepted into the National Park Service's Underground Railroad Network to Freedom Program in 2001. The Meachum property is the approximate gathering point of nine enslaved African Americans seeking freedom by crossing the Mississippi River from Missouri to Illinois in 1855. This crossing represents one of several notable escapes through the Underground Railroad along the Mississippi. As the first nationally recognized Underground Railroad site in Missouri, the area is a major historical treasure and source of cultural pride for the state.

Grace Hill Settlement House in St. Louis, Missouri, was awarded a 2005 EPA CARE grant. Grace Hill's mission is to work in disadvantaged neighborhoods, creating strong, healthy, helpful communities by encouraging and supporting neighbors as they help themselves and each other. As part of their efforts to improve community health and wellbeing, they used $50,000 in EPA Targeted Brownfields Assessment funding to conduct an environmental site assessment at the Mary Meachum Freedom Crossing in hopes to develop the property into a tourist destination. The environmental site assessment revealed no significant contaminants of concern on the property, allowing development plans as a tourist destination with a riverfront trail and visitor center to move forward.

The new Meachum Visitor Center serves as a community gathering place for celebrations and events, and an educational center to learn about St. Louis' unique history. It will also teach visitors about the history of the Underground Railroad and the historic events that took place at this crossing.

Located in North St. Louis City along the Mississippi River on the Riverfront Trail, the property encompasses roughly 11 acres. This area provides ample space to develop an experience for visitors that evokes the potential peril of the crossing for the slaves.

This unique, engaging, community resource will transform the riverfront into a cultural destination and a community center, allowing for community engagement, education, interaction, and growth.

To learn more about the Underground Railroad routes, visit *www.nps.gov/nr/travel/underground/detailedroutes.htm.*

Benefits

- Assessment of 11 acre site revealed no contamination of concern
- Revitalized key historic property in a disadvantaged neighborhood as a thriving community center
- Creates a cultural and tourist destination for individuals interested in learning more about the Underground Railroad Network
- Enhances the St. Louis Riverfront Trail and a park for runners and bikers along the river

Case Study: Essex Historical Society and Shipbuilding Museum - Essex, MA

Essex celebrates its history as an important center for shipbuilding

The small town of Essex, Massachusetts, located on the Essex River, has a population of just a few thousand people. It holds a unique place in maritime history as a shipbuilding hub. By the 1850s, over 50 vessels a year were being launched from 15 shipyards making Essex, North America's center for fishing schooner construction. One out of every 28 wooden vessels that flew the American flag was built in Essex, and its shipyards probably launched more two-masted vessels than any other town in the world. The shipbuilding industry accounted for most of the small town's revenue, embedding shipbuilding into the town's cultural heritage. Eventually, the inability to keep up with technological advances in the industry lead to several shipyard closures around World War II.

In 1976, the Shipbuilding Museum was opened in conjunction with the town's celebration of the American Bicentennial. The property adjacent to the Shipbuilding Museum had a long history of maritime shipbuilding activities. The fear of contaminants from the historic shipbuilding yard leaching into the river basin prompted the museum to apply for a grant from EPA's Brownfields Program. The Essex Historical Society and Shipbuilding Museum (EHSSM), a nonprofit organization, received $133,000 in Targeted Brownfields Assessment funding and a $200,000 EPA Brownfields Cleanup grant in September 2005 to address soil contamination on property it owned. Using the EPA grant and a $250,000 contribution from EHSSM, the cleanup of the property began in November of 2007; during some of this time portions of the museum were closed. Following cleanup, the museum reopened on May 15, 2008.

Photo courtesy of Len Burgess

The museum now receives hundreds of visitors annually. The success of the cleanup follows with the EHSSM's mission of stewardship. The society's 520 members believe in preserving the town's historical industry while remaining conscious of its ecological surroundings. The reopening of the museum gave residents and tourists access to the community's deep historical roots of shipbuilding culture that once was so prominent in Massachusetts and New England and boosted the town's economy by attracting new visitors. The project's success allowed the EHSSM to continue to tell the story of the town's impact on the shipbuilding industry and maritime heritage worldwide.

Find more information at *www.essexshipbuildingmuseum.org*.

Benefits

- Cleanup of long-time soil contamination at historic shipbuilding property
- Project success allowed the EHSSM to continue to tell the story of the town's impact on the shipbuilding industry and maritime heritage worldwide
- The museum educates hundreds of visitors per year
- Stewardship and outreach activities are conducted in the community

"The greatest benefit is a step in stewardship of the historic shipbuilding site. Stewardship, being a large part of the [EHSSM's] mission, having the site be cleaned for visitors and not pose a threat to ecological habitat is a very good thing to have done."

David Brown – Essex Historical Society

Essex, Massachusetts, celebrates its shipbuilding history through brownfields revitalization

Photo by Anthony Aneese Totah Jr

Cleanup underway at the Durango Powerhouse in Durango, Colorado

Case Study: Durango Discovery Museum - Durango, CO

Former power plant will be transformed into an interactive science museum

Durango, Colorado is home to the oldest remaining alternating current (AC) steam generated, coal fired power plant in the world. Built in 1893, the Durango Powerhouse provided AC power to the city during its early development. The plant operated until the mid 1970s, when it ceased operations and was boarded up with much of its original equipment still in place. After sitting idle for more than 20 years, the City of Durango took ownership of the property. The unknown contamination in this historical building posed a challenge to the city.

Meanwhile, the Children's Museum of Durango (now called the Durango Discovery Museum) was outgrowing its current space. They contacted the city in 2002 with an interest in relocating to the Powerhouse building along the riverfront. The two entered into an agreement in which the museum would raise funds to pay for cleanup and redevelopment of the property, while the city would provide administrative and technical assistance and lease the property to the Museum for $1 per year. In order to initiate cleanup, the city turned to one of its partners, the Colorado Department of Public Health and Environment (CDPHE). The city accessed CDPHE's Section 128(a) State Response Program funding to conduct site assessments. These and previous assessments showed the presence of asbestos, pigeon waste, polycyclic aromatic hydrocarbons (PAHs), and mercury left over from historic site operations. Additionally, uranium mining waste had migrated from an adjacent site and also required cleanup. Cleanup of the three-acre property, which included

asbestos and soil removal, was completed in 2005.

The new museum is expected to open phase II in the fall of 2010 and will incorporate sustainable design and showcase alternative energy systems. To make the building environmentally friendly, the museum also hopes to run on 100 percent green power by phase III of the project expansion. Moving to this larger facility will allow the museum to expand its science, technology, engineering, and math (STEM) education outreach across the "Four Corners" region; the new building will include a classroom or learning lab dedicated to educational programming. The museum exhibits will celebrate the history of the power plant through displays of original power plant equipment and information that highlights the facility's historic role in energy innovation. The museum will also examine the future of power, allowing visitors to operate a hydrogen-powered race car and explore building techniques that result in low utility bills. The museum will provide a hands-on environment for young children, making interactive science fun for all ages.

In addition to educating visitors, the museum serves as an important tourist destination for the city. It will help to catalyze a larger redevelopment of the city's riverfront and downtown areas.

Benefits

- Contribute $3 million per year to the Durango/La Plata County economy
- Purchase 100 percent "green power" to operate the facility
- Educate approximately 65,000 visitors annually at phase III completion
- Redevelopment has preserved a structure listed on the State and National Registers of Historic Places

Community Benefits of Arts and Culture Uses

Preserves National and Cultural Heritage

Celebrating history and heritage brings a sense of pride and accomplishment to a community. Preserving historic buildings can be a way to maintain the character of a neighborhood, so that future generations understand local history. These and other revitalization efforts pay tribute to the community's history while paving the way for further community improvements.

Spurs Community Revitalization

Studies show that artists are often early market entrants whose search for work space can help stabilize neighborhoods. Local communities assist them by transforming abandoned buildings and vacant lots into studio and retail space for theaters, museums, galleries and cultural venues, spurring revitalization beyond the brownfield property. Several communities, such as New Orleans, Louisiana; Seattle, Washington; Pittsburgh, Pennsylvania; and Parkersburg, West Virginia have created arts and cultural districts. These districts attract business investment and tourist infrastructure, reverse urban decay, and stabilize and revitalize struggling neighborhoods.

Drives and Sustains Local Economies

Arts and culture venues leverage additional event-related spending by their audiences which is known as a "multiplier effect"—and refers to how many times money spent by a tourist circulates through a community's economy. For example, when patrons attend a performing arts event they may park their car in a toll garage, purchase dinner at a restaurant, and eat dessert after the show. The typical arts attendee spends $27.79 per person, per event, in addition to the cost of admission. Nonlocal audiences spend twice as much as their local counterparts.[34] Thus, valuable commerce is generated for nearby merchants.

Increases Social and Civic Capital

Community-based arts and cultural activities promote social interaction, create a sense of community identity, build social capital, and support other local organizations. Research found that individuals that participate in art events are more likely to volunteer and serve on community boards. Regardless of a person's education level, gender or age, performing arts attendance increases the likelihood of volunteering by 25 percent.[35]

Creates Jobs

In 2008, the National Park Service approved more than 1,000 historic preservation projects, which created a total 67,705 jobs.[36]

Helps At-Risk Youth

Research shows that art prevention programs for at-risk youth offer an effective and affordable alternative to juvenile detention and police-centered crime prevention. One such program is the community arts program at Manchester Craftsmen's Guild in Pittsburgh, Pennsylvania. It offers art programs to hundreds of children each year—90 percent of whom get high school diplomas and enroll in college, compared with the 20 percent of the community's non-participating youth.[37] Another art prevention program, STARS in Fort Meyers, Florida, realized a 27 percent decrease in juvenile crime just three years after the inception of the program.[38] Art programs for at-risk youth decreased involvement in delinquent behavior, increased academic achievement, and improved youth's attitude about themselves and the future.[39]

"The arts and culture is a vibrant part of the real economy, contributing billions of dollars of economic activity per year; $166 billion based on the nonprofit sector alone."

Jeremy Nowak - President of The Reinvestment Fund in his 2009 testimony before Congress, available at *www.americansforthearts.org*

Fayetteville, North Carolina used its Brownfields funding to help create the Airborne and Special Operations Museum, which is open to the public free of charge

Did you know?

- There are more than 12,000 historic districts across the country, and most are located in areas with high poverty rates.[40]
- A federal tax credit for the rehabilitation of historic buildings provides an incentive for historical and cultural restoration and preservation.[41]
- Revitalizing brownfields in historic districts can restore a community's culture and heritage where it is needed most.

Resources

Arts and Culture Indicators Project
The Urban Institute's Arts and Culture Indicators Project (ACIP) helps policymakers make better decisions for neighborhoods and cities by providing information about the presence and role of arts and culture in communities. ACIP develops quantifiable measures of arts and culture that contribute to quality of life; the measures are available at *www.urban.org/projects/culturalvitality-indicators/about.cfm*.

Center for Creative Community
The Development Evaluation Toolkit allows cultural organizations to show the economic and social benefits they provide to their community. Find the toolkit at *www.williams.edu/Economics/ArtsEcon*.

A local artist paints a mural that will be displayed on a former brownfield in Winsted, Connecticut

Photo courtesy of Judy Griesedieck

National Trust for Historic Preservation
The Trust helps preserve the nation's historic places and make sure they are properly integrated within new developments. It also promotes preservation and revitalization within communities. Learn more at *www.preservationnation.org*.

National Assembly of State Arts Agencies
NASAA is a membership organization that strengthens state arts agencies, serves as a clearinghouse for data and research about public funding and the arts, and facilitates the transfer of ideas and information. Learn how art impacts community development at *www.nasaa-arts.org*.

National Endowment for the Arts and National Endowment for the Humanities
These public agencies provide grants and resources to bring arts and humanities into local communities. Learn more at *www.nea.gov* and *www.neh.gov*.

Shifting Sands Initiative
Community arts organizations can use their educational programming to help build bonds between neighbors and strengthen communities. Learn more about the role of arts and culture in neighborhood development and capacity building at *www.cultureshapescommunity.org/index.php?option=com_content&task=view&id=12&Itemid=41.*

YouthARTS Handbook
Americans for the Arts developed this handbook in an effort to document the benefits of arts programs on youth development. The handbook shares best practices in implementing effective youth arts programs. To access the handbook, visit *www.americansforthearts.org/youtharts/pdf/youtharts.pdf*.

Housing and Mixed Uses

As Winston Churchill noted, "We shape our dwellings, and afterwards our dwellings shape us." There is probably no other place that garners our attention and imagination as much as our home. Our home may be a city or town, but as a physical dwelling and family residence, it becomes a fundamental building block of neighborhoods and communities. Over the past century, housing demographics shifted dramatically —first from farms to urban centers, and then from urban centers to suburbs.

By the 1950s, several major forces introduced an era of suburbanization, which changed where we live in America. The Federal Housing Administration was created and its mortgage insurance programs incentivized single-family home construction in suburban areas. The post World War II economic boom spurred a dramatic increase in automobile production and large suburban developments. Rising incomes fueled the "American Dream" of a bigger home in the suburbs requiring a car for travel. Zoning was created to separate incompatible land uses. The national highway system was constructed, opening up new areas for development.

In recent decades, new development has often been located far from urban centers, surrounded by vast parking lots, and disconnected from public transit or even sidewalks. Figure 5 shows how almost 60 percent of our housing stock is composed of single-family detached homes.

Nationwide, household size is decreasing and more people are seeking alternatives to the traditional suburban lifestyle. In addition, as the general population grows in environmental awareness, green homes are increasingly popular with home buyers and renters.

Underlying this changing demand is great opportunity: it is estimated that by 2030, about half of the buildings in which Americans live, work and shop will have been built after 2000.[42] With so much space yet to be built, there is a great opportunity to reshape our communities right now.

Types of Housing in the U.S.

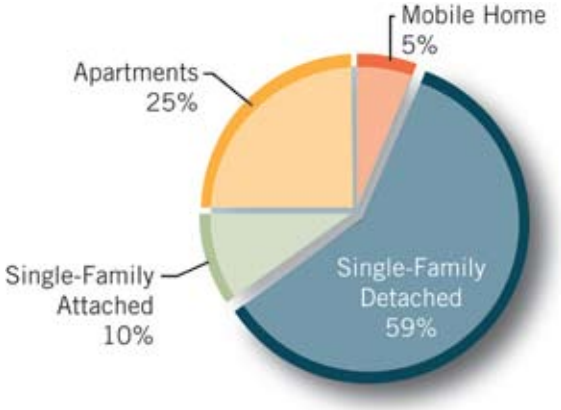


Figure 5: The majority of residential buildings available in the U.S. are single-family homes.[43]

Brownfields grant recipients report plans to address their community's housing needs as part of their brownfields redevelopment at nearly 300 properties across the country.

EPA Brownfields-funded housing projects include:

- Elizabeth, NJ, Marina Village Housing
- Emeryville, CA, GreenCity Lofts
- Milwaukee, WI, King and Hadley Property
- Swanton, VT, Habitat for Humanity Housing

EPA Brownfields-funded mixed use projects include:

- Hennepin County, MN
- Lakewood, CO, Villa Italia Mall
- Salt Lake City, UT, Gateway District

What is affordable housing?

There is a critical shortage of affordable housing because housing prices have increased since 1990, while incomes have not. Finance professionals recommend that people spend 30 percent or less than their income for housing. Nearly one in five American households now spends more than half their monthly income in rent or mortgage payments.

Why do we need diverse housing options?

An array of safe, decent and affordable housing options provides opportunities for people at all income levels to stabilize their income and create a home for their families. Stable housing can improve school performance, work and social behavior, and allow a family to invest in its health, neighborhood and future.

To meet changing preferences and demographics, a greater variety of housing choices will be needed: homes that are all shapes, sizes, levels of affordability, levels of accessibility and location.

Expanded housing variety also strengthens communities by allowing people of all different backgrounds, educational levels and income levels to live among one another. Incorporating affordable housing and units that meet universal design standards ensures accessibility by all community members, and allows residents to 'age in place' where their family or social networks remain.

Brownfields revitalization can help address our housing challenges because many brownfields are located in historic, older or historically low-income neighborhoods. Located near existing services and infrastructure including transit, brownfields may offer prime locations for residential construction, higher density housing, transit oriented development and mixed uses.

Communities that locate housing close to other services provide opportunities for residents to walk or bike to access services, reducing the need to drive and its associated environmental and public health impacts (e.g., greenhouse gas emissions, air pollution, noise, traffic injuries). New homes may be more resource efficient and can reduce energy usage and greenhouse gas emissions. As shown in Figure 6, 22 percent of national energy consumption comes from residential properties.

Housing and mixed uses can further enhance sustainability by integrating green buildings that are energy and water efficient, using permeable pavement for parking lots and sidewalks, or integrating green infrastructure such as rain gardens to reduce the impacts of stormwater.

As brownfields are revitalized for housing and mixed uses, it will be important to ensure that people who already live in the area are not displaced. At the same time, brownfield revitalization may create new opportunities for homeownership and wealth creation while expanding transitional housing and shelters for those without homes, including veterans and other vulnerable populations.

Instead of being a place people avoid, a brownfield revitalized for housing and mixed uses can become a place people call home. And that may be the biggest transformation of all. The following case studies highlight the creation of sustainable housing options that make communities truly livable.

Annual U.S. Energy Consumption

Figure 6: Commercial and residential buildings account for 40 percent of national energy consumption. Energy efficient buildings represent a tremendous potential to reduce national energy consumption.[44]

Case Study: The Watershed at Hillsdale - Portland, OR

Diverse housing and mixed uses are provided to local residents in need

The Watershed is located in the Hillsdale area of southwest Portland, Oregon. From the turn of the century until the 1950s, the property was part of the Fulton Park Dairy. In addition, a portion of the property served as a rail stop, followed by an auto wrecking yard, and gas fueling station, before being vacant for nearly 20 years. In 2005 an EPA Brownfields Cleanup grant allowed Community Partners for Affordable Housing (CPAH) to address petroleum contamination on the property. After entering the Oregon Department of Environmental Quality Voluntary Cleanup Program and excavating all petroleum contaminated soil necessary for redevelopment, the revitalized brownfield now provides affordable housing for veterans and seniors.

The Hillsdale neighborhood, involved and supportive of the Watershed project since 2001, worked with business leaders in naming the building and raised funds for lighting the sign and tower and installing a public water fountain. It was named Watershed because it is located between the Tualatin and Willamette River watersheds, at the headwaters of Stephens and Fanno Creeks. It is also designed to sensitively handle stormwater onsite. And finally, its name reflects the "watershed moment" in the neighborhood, as the property was one of the last pieces of buildable land and now serves as a community gateway.

The Watershed is a smart growth, mixed use, sustainable redevelopment consisting of 51 affordable senior housing units, eight units designated specifically for formerly homeless veterans, and 40 units available to those with incomes at or below 50 percent of the median. To provide additional benefits to the community, the project includes a 2,000-square foot community center and approximately 3,200 square feet of market rate office/commercial condominium space. This project knits together development in the Hillsdale Business Center with an expanding commercial node on the west side of Bertha Boulevard and helps neighborhood residents to cross a busy intersection to board buses and reach local businesses with the incorporation of a full-block crossing signal.

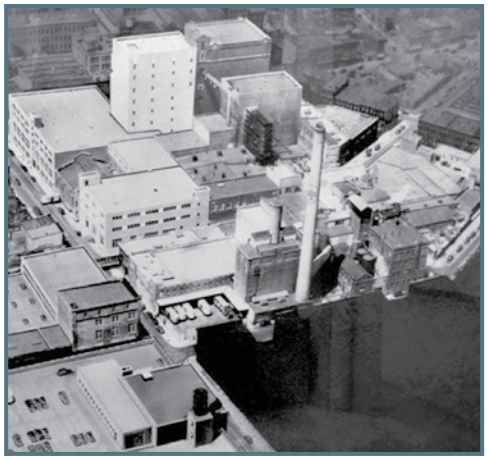
The Watershed project incorporates several innovative green building techniques and building materials that minimize life-cycle costs. Innovations include a high-efficiency central hot water boiler, durable building envelope materials, highly energy-efficient windows, and an innovative heat-recovering ventilation system. Storm water is detained onsite and is naturally pretreated to improve water quality in nearby watersheds. The project received a LEED® silver rating.

Benefits

- Cleaned up an underutilized community gateway property and connected the neighborhood's residential and commercial features through mixed use development
- Multi-year community engagement process fostered personal connections and pride in the community
- Met a demand for increased diversity in housing including senior housing, veteran housing and affordable housing units
- Community center provides central gathering area for local residents to connect
- Green building features offer energy efficiency and lower utility bills for residents, while enhancing local sustainability

"The units have been filled by a mix of seniors with ties to the neighborhood and those who are now establishing new roots in the neighborhood. For the surrounding area, the residents have added vibrancy. New volunteer opportunities have emerged for those who seek contact with seniors, and many of the seniors are volunteering."

Sheila Greenlaw-Fink – Community Partners for Affordable Housing



The Rheingold Brewery was once an important part of Brooklyn's commercial activity

Case Study: Rheingold Brewery - Brooklyn, NY

Former industrial center becomes home for hundreds of families

The Rheingold Brewery, founded in 1883, operated from 1890 until 1976 in the Bushwick neighborhood of Brooklyn, New York. Along with 13 other breweries, Rheingold Brewery helped turn the area into a center for American brewing for nearly 30 years. Once the official beer of the New York Mets, Rheingold supplied roughly 35 percent of New York City's beer from 1920 through the 1940s.

The restructuring of American brewing business prompted the closure of neighborhood breweries in Bushwick in the late 1970s. The neighborhood continued to decline for decades until an affordable housing developer, local nonprofit organizations and the federal government began investing in Bushwick's revitalization.

A design workshop in 2000 joined international architects and planners with local community leaders to develop a design concept for the property. Remediation and redevelopment began in 2002, and contaminated soil was removed from the property. With the help of a host of partners, this property was successfully redeveloped as housing and mixed use spaces, which was much needed in this working class community.

The first phase of development focused on homeownership, and was one of the first neighborhood redevelopment projects to do so. The finished project consists of 272 rental units, 88 co-ops, 30 condominiums, 58 two-family houses, and four three-family houses, all of which are affordable. An additional 50,000 square feet of office and

community space includes a senior center.

To ensure this new development further benefited the community by enhancing sustainability, the developer chose to use environmentally-responsible building materials. Also, solar panels installed on the roofs of the apartment buildings provide electricity to the common areas and there is a green roof on top of the rental apartment building.

The ripple effect from this redevelopment became evident as storefronts were cleaned up, new trees were planted and property values of local property owners increased across the community. The project received the Phoenix Award for brownfields redevelopment in 2005 and the John M. Clancy Award for Socially Responsible Housing in 2009; these awards recognized both the successful brownfields revitalization, and the services provided to the community.

Benefits

- Revitalized a 6.7-acre brownfield in the heart of an urban neighborhood
- Engaged city and state officials and local residents in the planning process to develop a reuse plan that met community needs
- Provides affordable housing for first-time homebuyers and a diversity of housing options
- Spurring ongoing community reinvestment and revitalization
- Enhances sustainability through renewable energy generation, the use of green building materials, and a green roof to improve stormwater management

Case Study: Cedar Grove Apartments - Sanford, FL

Transforming a vacant eyesore into a home for independent seniors

After Seminole County, Florida, saw an approximately 50 percent increase in residents 75 years or older between 1990 and 2000,[45] the Center for Affordable Housing recognized the serious need for senior rental housing. Working within their mission to develop safe and affordable housing for the lower-income residents of Central Florida, the Center sought a property to purchase for senior housing units. In 2006, the Center identified the former Freeman property in Sanford, Florida, as an affordable option which fit the zoning needs of the project. The property was a former laundry facility, which sat vacant for nearly 30 years. The overgrown, vacant property stood out as an eyesore in the mixed use, residential-commercial neighborhood.

With EPA State and Tribal Response Program funding, the Florida Department of Environmental Protection conducted site assessment and source removal activities to assist the Center for Affordable Housing in developing affordable housing options for the senior community. Completed in 2008, Cedar Grove Apartments contains single floor units, two of which are handicapped accessible, and the remaining units are designed for seniors (e.g., roll in showers, no tubs). Seven single elderly residents currently occupy the property.

By creating a safe and affordable housing option through this project, seniors in the area were finally offered an alternative to assisted living facilities.

Benefits

- Redeveloped a contaminated parcel that was vacant and neglected for nearly 30 years in the middle of a mixed use neighborhood
- Created safe and affordable housing, designed specifically with seniors in mind
- Increased the local diversity of housing options to meet the needs of changing community demographics
- Increased the independence of seniors by locating housing near other basic services

Did you know?

By 2030, one out of five people in the U.S. will be age 65 or older.[46] As they age, many will experience illness and changes in their sight, hearing and physical abilities which may require adaptation in their physical environment to live safely.

Homes and public spaces that adopt Universal Design principles can support seniors and residents of all ages to navigate space safely.

Creating safe and affordable housing for seniors offers more options to a growing retirement population

Photo by Gary T Alton

Adaptive reuse of well-located and culturally or historically important sites can yield neighborhood, environmental, economic, and community benefits, as shown by the revitalization of the former Falstaff Brewery.

The weather beacon atop Falstaff's tower provided local weather forecasts by using colored and flashing lights

Case Study: Falstaff Brewery Apartments - New Orleans, LA

Abandoned brewery is transformed into housing

The Falstaff Brewery operated in the Mid-City area of New Orleans since the early 1900s. The property laid idle for nearly 30 years since its closure in 1978. Although it was deteriorating, this seven-story building still bore its neon "Falstaff" sign – a neighborhood landmark.

In the wake of Hurricane Katrina, New Orleans residents faced daunting challenges in rebuilding their city. To make the city strong once again, the Regional Planning Commission for the New Orleans metropolitan area and local developers are investing in traditionally low income areas to build affordable and environmentally-friendly housing. A former brownfield was cleaned up with EPA's help and brought back to life as affordable housing.

The Regional Planning Commission used EPA Brownfields funding to conduct an environmental site assessment on the eight-acre property in August 2005. The developer, Falstaff Associates I LLC, then purchased the property and addressed asbestos, lead-based paint, and solid waste throughout the building. The Falstaff site received clearance from the Louisana Department of Environmental Quality following cleanup of the historic facility.

The developer converted the building into one-, two- and three-bedroom apartments. By preserving the structure and the iconic "Falstaff" sign, the redevelopment was able to celebrate the neighborhood's history, while making critical strides in renewing the City of New Orleans. Nearly half of the 147 apartments are reserved for households that fall below the city's median income. Residents began moving into the building in March 2008 and it is now 95 percent occupied. The project is spurring redevelopment of the surrounding area, as construction of additional apartment complexes is underway throughout the neighborhood. This is one of the first redevelopment projects to be completed in New Orleans since Hurricane Katrina. Residents enjoy a rooftop terrace and retail courtyard, and a beer garden is in the works, paying tribute to the property's past use.

Benefits

- Eight-acre property was assessed and had hazardous building materials removed
- Provides 147 apartments for low- and moderate-income families
- Enhanced site sustainability by using existing structures to minimize waste created by demolition
- Helping to enhance and strengthen the community fabric of New Orleans
- Retained local culture through adapative reuse of commmunity landmark

Community Benefits of Housing and Mixed Uses

Increased Variety of Housing Options

Providing a variety of housing options within a community brings a range of benefits. It allows people of all income levels to live in the same neighborhood, which allows for a more diverse population. More housing options provide opportunities for people to maintain their community ties as they move through different life phases of life. For example, with enough housing diversity, someone could live in the same neighborhood when they are single, part of a couple, raising a family, downsizing after having a family, and possibly aging in place. Without housing choice, people are pushed into leaving a neighborhood in which they have close social ties.

Providing Homes to Those in Need

Communities require an adequate stock of affordable housing to ensure that residents can afford to own or rent a home. Redevelopment projects that address the needs of low-income, elderly or special needs individuals can build more interconnected communities and create new opportunities for groups that are often disenfranchised. Brownfields redevelopment projects across the nation have increased affordable housing to reach low- or moderate-income residents.

Mixed Uses Improve Health and Quality of Life

In addition to creating affordable or senior housing, brownfields can be used to site mixed uses. For example, larger residential complexes or brownfields located at infill sites can be developed as mixed use spaces, encouraging more sustainable communities and minimizing environmental impacts because residents can walk to commercial areas instead of driving to them. These walkable communities can generate both environmental and public health benefits as people choose to walk rather than drive. Households in city centers not only have shorter commutes, but drive less for non-work activities.[47]

Enhanced Sustainability

Residential buildings themselves may incorporate energy efficiencies, store and manage stormwater runoff, or generate power through solar panels on the roof to reduce electricity use and help save homeowners money on their utility bills. Residential redevelopments planned on a larger scale can follow smart growth principles that encourage residents to live environmentally sustainable lifestyles.

Improve Healthy Housing Stock

The National Center for Healthy Housing estimates 5.7 million families live in substandard housing, which cause significant illness, injury and deaths.[48] A range of public health problems, including lead poisoning and asthma has been linked to older housing in poor condition. Cleaning up brownfield areas can improve the value of and income generated from the reused site as well as adjacent and nearby properties. In addition to strengthening the tax base, this provides additional incentives and resource opportunities for local government, public and private property owners to improve their property conditions, leveraging economic and public health benefits for owners, residents and neighbors alike.

Economic Impacts of New Housing Projects

The estimated one-year local impacts of building 100 single-family homes in a typical metro area, according to the National Association of Home Builders, include:

- $21.1 million in local income
- $2.2 million in taxes and other revenue for local governments, and 324 local jobs

In contrast, the estimated one-year local impacts of building 100 rental apartments in a typical metro area include:

- $7.9 million in local income
- $827,000 in taxes and other revenue for local governments, and 122 local jobs

For more information, go to the National Association of Home Builders Web site to see a recent report on the local economic impact of home building at *www.nahb.org/fileUpload_details.aspx?contentTypeID=3&contentID=35601&subContentID=219188.*

Using EPA and HUD funding, a deteriorating building in Miles City, Montana was transformed into affordable housing

Resources

Community Development Block Grant
This U.S. Department of Housing and Urban Development (HUD) program gives grants to cities across the nation to assist communities with all the challenges addressed earlier in this section—affordable housing, vulnerable populations, and viable urban centers. For more information, visit *www.hud.gov/offices/cpd/communitydevelopment/programs/index.cfm*.

Habitat for Humanity
Founded in 1976 as a nonprofit organization seeking to eliminate poverty and homelessness, Habitat has provided affordable housing for more than 1.5 million people around the world. Volunteers help construct or rehabilitate homes for low-income families that apply for the program, and Habitat plans to build 5,000 green homes for low-income families. Habitat's experience building new structures on idle land or refurbishing dilapidated structures in low-income neighborhoods makes it an excellent resource for Brownfields grant recipients. For more information, visit *www.habitat.org*.

Rebuilding Together
This nonprofit helps preserve communities through safe and affordable housing. The organization focuses on properties that are most affected by our nation's housing challenges, such as seniors, veterans, the disabled or victims of natural disasters. With a focus on revitalization and green building, Rebuilding Together is making a difference across the country. To learn more, visit *www.rebuildingtogether.org*.

The Center for Inclusive Design and Environmental Access and the Rehabilitation Engineering Research Center on Universal Design at Buffalo
The Research Center on Universal Design at Buffalo makes environments and products more usable, safer and healthier in response to the needs of an increasingly diverse population. For links to a variety of development-oriented tools and organizations, visit *www.ap.buffalo.edu/idea/Links/index.asp*.

EPA's Smart Growth Program
The program seeks to "expand economic opportunity, protect public health and the environment, and create and enhance the places that people love." The EPA Smart Growth Program provides research, grants, technical assistance, and information to help local communities employ smart growth principles as they shape the communities of tomorrow. For more information, visit *www.epa.gov/dced/index.htm*.

Smart Growth America
Member organizations share the common goals of historic preservation, revitalization, and maintaining affordability in our nation's communities. Smart Growth America provides various resources to coordinates development, transportation, revitalization of older areas and preservation of open space and the environment. To learn more and find resources, visit *www.smartgrowthamerica.org*.

Policy Guide on Smart Growth
The American Planning Association offers recommendations for planning transportation and land use, social equity and community building, and environmental protection and land conservation. Find the recommendations at *www.planning.org/growingsmart/index.htm*.

Community and Civic Uses

While street boundaries can physically define a neighborhood, it is the shared places for community and civic engagement that can actually create a sense of community. These places can be created when a property's new use expands greenspace for new community and civic uses such as parks, trails and picnic areas; or for new civic amenities such as libraries, schools, hospitals, health clinics, tourism, mass transit, job training centers and even places of worship. The creation of simple, clean and safe public open space or a neighborhood civic building from a brownfield can dramatically alter community perceptions and generate positive momentum that leads to area-wide transformation.

Redevelopment options that link community and civic destinations to citizens can create more sustainable neighborhoods that reduce the need for cars. For example, trails, sidewalks, bikeways and roads that create better linkages across a community provide a multitude of options for people to use to "run" their everyday errands.

Adding greenspace in the form of parks, playgrounds, athletic field, trails or vegetation—such as native trees, shrubs and other plants—can improve stormwater management, reduce the 'heat island' effect, improve air quality, and provide recreation space for residents. It can also provide a venue for increasing physical activity through more exercise and recreation.

Today, there is a growing recognition of the role that land use plays in many pressing issues, from water quality, to greenhouse gas emissions, sprawl, and even public health. Brownfields revitalization enhances sustainability by enabling the creation of more sustainable and energy-efficient cities, towns and neighborhoods.

Community and civic uses may also include transit centers for buses, trolleys, subways, light rail or other forms of transportation. Transportation currently contributes about 28 percent of the United States' total greenhouse gas (GHG) emissions—and emissions from transportation are growing faster than other sectors, representing almost half of the increase in total GHGs between 1990 and 2006.[49] We can slow and even reverse this trend by shifting travel from automobiles to transit. In fact, reducing the daily use of one low occupancy vehicle and using public transit can reduce a household's carbon footprint between 25 and 30 percent.[50]

Moreover, community and civic uses such as schools, health facilities, libraries and places of worship can provide essential physical space where residents meet one another and find common ground. These spaces often provide a network of connections among residents that enable the social glue of a community to form. In addition, brownfields located in neighborhoods that are underserved by critical human services, such as health care, can be redeveloped to provide these needed services. Incorporating these uses into larger redevelopment plans not only makes a project more successful, but can lead to broader community benefits. It can increase pedestrian traffic to other nearby services, promote commerce and economic development, and spur increases in adjacent property values, which leads to greater tax revenue.

The following case studies highlight the possibilities for sustainable brownfields redevelopment to enhance community and civic life.

EPA Brownfields-funded community and civic projects include:

- Culver City, CA, dog park
- Lancaster County, PA, Grace Lease Park and Roberto Clemente Park
- Marrero, LA, Progressive Church Family Life Center

Did you know?

EPA provided supplemental grant funds between the late 1990s to 2003 for Brownfields Assessment grantees with greenspace components in their reuse plans. These incentives led to nearly 400 brownfields redeveloped to include a greenspace component.

"At the edge of a former landfill, the new Morris – 1st Source Scout center will create an enduring legacy that highlights the importance of environmental stewardship and nurtures young people to become the future leaders of our community."

Stephen Luecke – South Bend Mayor

Case Study: Fredrickson Park - South Bend, IN

From garbage to gorgeous: reusing a landfill as park space

This former landfill in South Bend, Indiana, was revitalized as a park and as a community center. Fredrickson Park is now a favorite location within the community, particularly with the area's youth. University of Notre Dame students use the facilities to teach kids about environmental issues, act as Den Leaders for boy scout troops, and conduct field trips that teach elementary school children about the park's flora, fauna and overall ecosystem. Community reception to the new park has inspired similar area plans, including an adjacent, 2.5-acre parcel of land designated as a future picnic area.

Located just a few blocks from the University of Notre Dame campus, this 2.65-acre, former landfill sat idle for years. After acquiring the property, South Bend funded assessments that revealed the presence of polyaromatic hydrocarbons (PAHs) and other metals in the soil.

An EPA Brownfields Revolving Loan Fund grant awarded to the city in 2004 helped to remove contamination and prepare the property for reuse. However, rather than opting solely for commercial or residential redevelopment, the city opted to set aside the majority of the property—nearly two acres—as a new park. Native grasses and flowers were planted on the property, and walking trails and a stormwater pond were incorporated into the park's design.

Two student teams from Notre Dame designed a community center for the park that used recycled materials in its construction and is now powered in part by solar energy. In 2007, the boy scouts opened their new headquarters. This $1 million facility includes an environmental education center, classrooms, a new library and public meeting space.

Benefits

- Consolidated contamination at this former landfill, making it safe again for local residents
- Provides new recreational and community space in an inner-city area with high poverty and unemployment rates
- Transformed the property aesthetically, increasing area property values and generating momentum leading to adjacent redevelopment as public space
- Created a much-needed facility for the local Boy Scouts and a community environmental education center
- Enhanced sustainability by adding greenspace and native vegetation to the community

Case Study: The Old Santa Fe Railyard District - Santa Fe, NM

Former local civic center is restored after decades of abandonment

Back in 1880, the first train rolled into Santa Fe, New Mexico on a spur line from the Atchison, Topeka and Santa Fe Railway Company, its arrival celebrated by colorful speeches and a grand parade. With that train, an era of economic and social change began that is still evident in the life of Santa Fe today.

This new train line brought tourism and new business opportunities to the young town, and the Santa Fe Railyard District remained a cultural and social center until the 1940s. Older neighbors still living next to the Railyard today remember afternoons picking wild lettuce and swimming along the irrigation canal that flows through the property. However, as cars became a preferred method of transportation, the railyard was abandoned, even as trains continued to pass through. By the mid-1980s the entire Railyard District had become an eyesore, like other railyards nationwide that fell into disuse. The town deemed it a blighted area and initiated a process to redevelop it.

Sometimes a brownfield reuse can not only benefit a community, but become its greatest asset. This happened in Santa Fe, New Mexico, when the 50-acre, abandoned railway property was revitalized to become one of the area's prized retail, arts and outdoor recreation areas.

In 1995, the city of Santa Fe purchased the 50-acre property and redevelopment plans began through a collaboration of city officials, architects and a local, nonprofit organization. The city emphasized the need to protect adjacent neighborhoods. The community also weighed in on what they wanted the property to become—thousands of citizens participated in planning meetings over the thirteen years it took to redevelop the property. An EPA Brownfields Assessment grant awarded to the City of Santa Fe in 1996, and Targeted Brownfields Assessment funding received in 1999, were used to characterize soil contamination.

Sometimes a revitalized brownfield can not only benefit a community, but become its greatest asset.

The residents of Santa Fe ultimately decided that a mix of transportation, park area, restaurants, local businesses and a new arts and cultural district would provide the best reuse for this property. The town worked with the Trust for Public Land for financing and redevelopment assistance over the next decade, and construction began on the Railyard District in 2005.

In September 2008, the redeveloped, historic Santa Fe Railyard District was officially opened to the public. Art studios, restaurants and shops provide new shopping and dining opportunities for the residents of Santa Fe. The District also hosts a farmers market that has become a big draw to the newly redeveloped area; Santa Fe residents can purchase local and seasonal produce from New Mexican farmers throughout the year. The redeveloped District also offers multiple parks and new greenspace for the downtown area. The 10-acre Railyard Park has gardens, walkways and gathering spaces for residents to enjoy, as well as a children's playground with slides and climbing equipment.

Benefits

- Cleaned up and redeveloped a large, long-idle brownfield in the center of downtown Santa Fe
- Rejuvenated a cultural and historical center of the city
- Created a diverse use area that draws the community to new resources
- Created jobs and enhanced the city's economy
- Provided park space, in addition to mixed uses, to create a thriving community and civic destination

Shoppers visiting an outdoor market at the Old Santa Fe Railyard District

Willa Carson Health Resource Center is a nonprofit clinic in Clearwater, Florida

Case Study: Health Care Facilities

Land revitalization improves public health in more ways than one

Healthcare is an important national issue. Several communities and developers see brownfields revitalization as a way to provide or enhance health care access in their communities. Not only does the brownfield revitalization process improve the environmental health of a community, it can serve to expand the care system within the community. The following profiles highlight different ways that brownfields revitalization can be used to meet community health care needs.

Willa Carson Health Resource Center - Clearwater, FL

The Willa Carson Resource Center offers immunizations, physicals, tests and screenings, flu shots, and counseling services to residents in North Greenwood, one of Clearwater's poorest neighborhoods. The center is staffed by professionals who volunteer their time to work at the nonprofit clinic. As part of the city's environmental justice plan, North Greenwood representatives participated in redevelopment planning and voted unanimously for the city to lease the property to the nonprofit clinic. The Brownfields grant recipient conducted environmental assessments at this former gas station, and the state funded $200,000 for the removal of underground storage tanks and soil cleanup.

Miller Children's Hospital - Long Beach, CA

Miller Children's Hospital is the first children's hospital in the nation to receive a federal Brownfields Cleanup grant. The hospital provides comprehensive inpatient and outpatient services for children of all ages, and is one of the only two children's hospitals in Los Angeles County. The hospital is home to one of the largest neonatal intensive care units in California, and treats more than 60 high-risk neonates daily. The $600,000 grant from EPA enabled the hospital to undertake a $151 million expansion project onto formerly contaminated land. The new building will include seven operating rooms, 48 neonatal intensive care beds, and 24 pediatric beds for critically ill children.

Reno-Sparks Indian Colony Tribal Health Center - Reno, NV

Reno-Sparks Indian Colony (RSIC) is transforming a former industrial property into Three Nations Plaza, future home of a Wal-Mart, which will generate jobs and significant tax revenues. RSIC will use the tax revenues from this development to fund police, healthcare, education and economic development for the tribe. Specifically, revenues will be used to repay bonds issued for the construction of a recently completed, $20 million tribal health center that provides services to more than 9,000 Native Americans in the Washoe County area.

Providence North Portland Health Clinic - Portland, OR

The Providence North Portland Health Clinic provides access to six family medicine physicians and two obstetricians in this previously underserved North Portland neighborhood. This property is a former vacant gas station that received assessment funding from the Portland brownfields program in the late 1990s. The Oregon Department of Environmental Quality (DEQ) conducted oversight during the redevelopment of the property which found a total of 600 cubic yards of soil contaminated with gasoline. In 2003, this brownfield became the focus of a design charrette at the National Brownfields Conference that included local stakeholders and the property owner. The owner sold the property to Providence Health Systems in 2006.

Photo of the Providence North Portland Health Clinic in Portland, Oregon

Case Study: The Meeting Street National Center of Excellence - Providence, RI

State-of-the-art facility serves the educational needs of children of all abilities

The Meeting Street National Center of Excellence educates children of all abilities through its three schools, early intervention programs, and outpatient therapy. The facility also serves as a resource center for families providing information on medical issues, educational curricula and treatment options. Meeting Street, a nonprofit organization, purchased the eight-acre property, which is located in an economically distressed neighborhood, for reuse as three schools and an outpatient therapy center. The cleanup and reuse of one of the many underutilized lots in the neighborhood has helped to improve community image. Meeting Street conducted fund raising activities to raise more than $20 million to help relocate the school to this central location.

The property has a variety of past uses including residential, an iron works facility, an automobile service facility, a furniture warehouse, and a produce distributor. Several deteriorating structures were located on the property and it was contaminated with lead, arsenic and other hazardous substances. In 2004, Meeting Street applied for and received a $200,000 Brownfields Cleanup grant to address property contaminants. Completed in June 2006, cleanup also included removing old, deteriorating buildings and two storage tanks.

In January 2007, the Meeting Street National Center of Excellence opened its doors to begin serving more than 3,000 children in the community each year. Meeting Street has been awarded the U.S. Green Building Council's LEED® certification, the first school in Rhode Island to be certified. Three acres are dedicated to much needed greenspace and recreational use. The facility was developed to allow for 90 percent of all interior spaces to be lit by natural light. Additional sustainable features of the development included use of low-VOC (volatile organic compounds) paint. Materials placed in the building are of high-recycled content, including the carpet throughout the facility.

Photo courtesy of Jennifer Kohanski

The development project included recycling all construction and demolition materials and incorporated a white roof, and advanced heating and cooling systems. Another unique design feature of the building includes incorporating ramps, in addition to stairs and elevators, throughout the building to ensure interaction of students and staff of all physical abilities.

The new facility is expected to stimulate additional investment, redevelopment and economic development, as well as stabilize the area and provide much needed greenspace. The facility will also benefit from its central location, accessible by public transportation and across the street from the new medical building. It is anticipated that the National Center for Excellence will help attract additional jobs.

Benefits

- Cleaned up an eight-acre brownfields
- Provides access to programming for all children, including those with special needs
- Informs families of medical issues, treatment options and educational curricula
- Incorporated sustainable design elements into redevelopment
- Property values have been shown to increase in areas with better schools

Meeting Street School allows children with and without disabilities to learn side-by-side in a fully inclusive facility.

"Public spaces play a vital role in the social life of communities. They act as shared resources in which experiences and value are created…people make places, more than places make people."[51]

The Social Value of Public Spaces

Falls Park is part of a 26-acre redevelopment project in Sioux Falls, South Dakota

Community Benefits of Community and Civic Uses

Enhanced Sense of Community

Public spaces make people feel connected. They can be a place to gather and celebrate a successful brownfields transformation. In Bridgeport, Connecticut, a 10-acre industrial area adjacent to two schools and notorious for drug use and other criminal activity was redeveloped into a recreational park featuring basketball courts, softball fields, playgrounds, a public pavilion and an amphitheater. Within a couple of years, a space that had previously been a source of crime and fear in the community became a valuable recreational asset.

Reduction in Crime

For those living in disadvantaged neighborhoods accustomed to crime, poverty and living side-by-side with idle brownfields of unknown risk, revitalization signals change and can eliminate the source of neighbors' real and perceived fears of drug manufacture or sales, robberies, waste dumping, arson, vandalism and other illegal activity. A study by Dr. Frances Kuo[52] found lower crime rates on public housing blocks that also have vegetation. Beyond that, a dramatic, positive change in a single property can initiate bigger neighborhood changes and renew a city's commitment to a disadvantaged neighborhood and collaboration with the community in shaping improvements—eliminating crime and decay, and creating spaces that becomes a source of community pride.

Increased Home and Property Values

Research in a number of communities shows that aesthetic improvements to public greenspace, such as new community gardens and tree-lined parks, can increase the value of neighboring properties, providing an economic (as well as aesthetic) incentive for such reuses.[53] Even those who do not directly take advantage of this new space benefit from its effective reuse.

Increased Private Investment and Economic Development

The creation of community and civic spaces and their associated aesthetic improvements increases local property values and may also attract private investment and generate momentum for area-wide transformation. Enhancements attract more people to the area, increase sales and property taxes, and lead to continued infrastructure improvements and redevelopment. In Gardena, California, the redevelopment of a brownfield into a public transportation facility brought in $25 million in federal transit funding, created 75 jobs, and created economic momentum that turned a $3.1 million budget deficit into a $3 million reserve in less than five years.[54]

Resources

Project for Public Spaces
Founded in 1975, Project for Public Spaces is a nonprofit organization dedicated to helping people create and sustain public spaces that build stronger communities. For more information, visit *www.pps.org*.

U.S. EPA Greenscapes
EPA offers resources to help communities make cost-efficient and environmentally friendly solutions for landscaping. Access the resources at *www.epa.gov/waste/conserve/rrr/greenscapes/index.htm*.

Greenspace Planning Toolkit
Communities can receive guidance on planning greenspace from the University of Georgia. A toolkit for the evaluating of land parcels for greenspace planning can be accessed at *www.rivercenter.uga.edu/publications/pdf/toolkit.pdf*.

The Excellent City Park System: What Makes It Great and How to Get There
A resource developed by the Trust for Public Land which proposes seven measures of city park excellence. See if your community measures up at *www.tpl.org/download_excellent_parks.cfm*.

Ecological Revitalization: Turning Contaminated Properties Into Community Assets
This report is designed to support ecological revitalization, address technical considerations of ecological revitalization at contaminated properties, and present general planning and process considerations. The report can be accessed at *www.clu-in.org/download/issues/ecotools/Ecological_Revitalization_Turning_Contaminated_Properties_Into_Community_Assets.pdf*

Land and People
The Trust for Public Land produces a semi-annual free magazine which documents the activities by people to protect land. Access it at *www.tpl.org/freemag.*

Increasing Physical Activity Through Community Design
The National Center for Bicycling and Walking published a report which focuses on how to make communities more bicycle-friendly and walkable. Download the report at *www.bikewalk.org/pdfs/IPA_full.pdf.*

The State Role in Urban Land Redevelopment
State legislation and programs can boost capacity to redevelop vacant and abandoned properties. Find the Brookings Institute study outlining these initiatives at *www.brookings.edu/es/urban/publications/leighvacant.pdf.*

Local Initiatives Support Corporation
The Local Initiatives Support Corporation (LISC) is dedicated to helping community residents transform distressed neighborhoods into healthy and sustainable communities of choice and opportunity—good places to work, do business and raise children. Access additional information at *www.lisc.org*.

The Reno-Sparks Indian Colony Tribal Health Center

Photo courtesy of Dave Hodges

3. Summary and Looking Forward

"The momentum from our brownfields project has spilled over into the rest of the community. Our Brownfields Sustainability Pilot has opened the door for us to establish partnerships to redevelop our community and create the type of jobs our citizens need. If we can create these jobs, we can give people hope for their future here."

Jim Jones – City of Valley, Alabama

Our grantees and brownfield revitalization partners have created a wealth of examples that demonstrate the many environmental, economic and other community benefits that can spring from the revitalization of brownfields and other contaminated lands. Two things are apparent from the examples presented in this report: the benefits of brownfields reuse are not confined to the property's boundaries and they are not only about the environment or job creation. The examples presented also illuminate two key components that are often present when brownfield revitalization helps to create more livable communities.

First, we see that enabling robust community conversations among those affected by brownfields helps to place the property into the context of the neighborhood, the community and the region to inform the best possible reuse. We can nurture the collaborative spirit of the community, create capacity to talk about other pressing issues, and give voice to community members who have been underrepresented in community decisions.

Second, we see that setting our sights on sustainability is also a critical characteristic for success. Communities must balance several, sometimes competing, factors—such as economic opportunities, the environment, culture, public health and other community priorities. The equitable balance of these factors also implies consideration of both short- and long-term timeframes as truly sustainable reuse presents the opportunity to build intergenerational bridges with our senior citizens, our youth and future generations.

Another core element of sustainability is diversity. Just as biodiversity is an indicator of a healthy ecosystem, what Jane Jacobs called "vibrant diversity" is a sign of a community's health. The four reuse themes featured in the report—agriculture and food systems, arts and culture, housing and mixed uses, and community and civic spaces—can create the variety and diversity needed for a flourishing, healthy community.

With vigorous community involvement and strong sustainability goals, brownfields revitalization offers the chance to rebalance the scales of environmental, social and economic injustices. There is much poetry to recycling land in a way that mends the social fabric of our communities. As the Native American proverb goes: "Treat the earth well. It was not given to you by your parents. It was loaned to you by your children."

We will continue to provide additional examples and resource updates on the EPA Brownfields Web site: www.epa.gov/brownfields. In the meantime, we hope this report serves as a catalyst to make new ideas and connections to improve the environment, health and quality of life in your community. What path will you take to help revitalize your community?

There are many paths to take with new partners and growing resources to make new connections, and enhance community benefits through brownfields cleanup and revitalization...

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Back cover photo: Artist Vickie Jo Sowell created sculpture for a community garden in Emeryville, California

Photo courtesy of EPA files

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