

Brownfield/Vacant Properties Literature Review Summary Table

Author/citation	Type of study	Sample	Key findings
<p>The Benefits of Brownfield Redevelopment in Minnesota: Fueling Economic Growth and Revitalizing Communities</p>	<p>Research and Practice</p>	<p>Minnesota Brownfield Sites</p>	<p>Pursuing the cleanup of vacant or inactive sites will bring economic, social and environmental benefits to communities through an integrated mixed land use structure that incorporates both public and private investors.</p> <p>Recommendation: Begin incorporating brownfield redevelopment into decision making processes to ensure that public funding of brownfield projects can be accessed and benefit the community projects and leverage private investors.</p> <p><u>Economic:</u></p> <ul style="list-style-type: none"> <li>• Long term – redevelopment can lead to job creation, private investment, tax base revitalization etc.</li> <li>• Brownfield redevelopment is an efficient way to utilize land while keeping costs lower during redevelopment.             <ul style="list-style-type: none"> <li>○ Infrastructure costs for greenfield development are between 5 and 6 times greater than infrastructure costs related to the development of brownfield sites.</li> </ul> </li> </ul> <p><u>Environmental Impacts of Brownfield Re-Development:</u></p> <ul style="list-style-type: none"> <li>• Removal of contaminants has an immediate impact on environmental, natural and human health benefits.</li> <li>• Contaminants found in soil can impact groundwater and drinking water; increasing the risk of disease or illness for humans and wildlife.</li> <li>• Brownfield sites when redeveloped are remediated to a standard that makes them safe for use.</li> <li>• Redevelopment also reduces the demand for developable land, energy consumption, and greenhouse gas emissions while also making improvements to air and water quality.</li> <li>• One study indicating that for one redeveloped brownfield acre it conserves 4.5 greenfield acres.</li> <li>• Mixed use reduces the demand on transportation resulting in benefits to air and energy.</li> </ul> <p><u>Social and Community Benefits:</u></p> <ul style="list-style-type: none"> <li>• Livability and housing trends are now favoring those areas that are connected and within mix use areas.</li> <li>• Brownfield redevelopment can assist in future connections toward transportation linkages and residential locations.</li> </ul>

<p>No Place to Play BY: The trust for Public Land</p>	<p>Research</p>		<p>Parks have extensive impacts on neighborhood economics, health, education, and safety.</p> <ul style="list-style-type: none"> <li>• CDC indicates that those Americans live closer to parks are more likely to exercise regularly, leading to weight loss, increased energy and overall health.</li> <li>• Parks increase residential and commercial property values</li> <li>• Urban parks provide environmental impacts, filtering pollutants from air, controlling stormwater runoff.</li> <li>• Educators indicate that with local field trips to park or outdoor classroom themed with natural settings assists in enhancing education</li> <li>• Law enforcement report that is a decrease in juvenile arrests after recreational facilities open in low income neighborhoods.</li> <li>• Urban planners agree that well maintained parks improve communities by increasing neighborhood cohesion. Neighbors are more likely to interact, take pride in their neighborhood, form neighborhood watch groups and other local improvement groups.</li> <li>• Kids without parks lose health and recreational benefits, and they may never experience the kind of casual outdoor play that made childhood so memorable for older generations.</li> </ul>
<p>The Association Between Extreme Precipitation and Waterborne Disease Outbreaks in the United States, 1948-1994</p>	<p>Research</p>		<ul style="list-style-type: none"> <li>• Under conditions of high soil saturation, rapid transport of microbial organisms can be enhanced.</li> <li>• Warmer air can hold more moisture, and changes in the hydraulic cycle in United States have been evidenced by increases in cloud cover and total precipitation.</li> <li>• Research indicates that outbreaks across the seasons show that the number of outbreak is highest during the summer month and lowest during the winter months.</li> </ul>
<p>Public Health Effects of Inadequately Managed Stormwater Runoff</p>	<p>Research and Practice</p>		<ul style="list-style-type: none"> <li>• Expansion of urban areas is creating more impervious surface such as roofs roads and parking lots that collect pathogens, metals, and sediment and chemical pollutants and quickly transmit them to receiving waters during rain and snowmelt events. This nonpoint source pollution is one of the major threats to water quality in the US.</li> <li>• A raised awareness of cross contamination from runoff and surface water and contamination by nitrate and pathogens from septic systems.</li> <li>• Community design has a major effect on stormwater volumes and quality, as well as treatment methods and costs.</li> <li>• Research shows that development leads to higher flood peaks and increased runoff volume generates greater pollutant loads.</li> <li>• During construction soils become compacted and can generate up to 90% as much runoff as pavement.</li> <li>• Recommendation: <ul style="list-style-type: none"> <li>○ Reducing stormwater runoff and associated nonpoint source pollution <ul style="list-style-type: none"> <li>▪ This could be a valuable way of integrating strategy to protect public health at a low cost. IF thought about in the planning phases the reduction of stormwater runoff can</li> </ul> </li> </ul> </li> </ul>

			<p>be maximized.</p> <ul style="list-style-type: none"><li>○ Implement BMP's for new development to minimize environmental impacts<ul style="list-style-type: none"><li>▪ Compact site design and BMP's to manage water runoff enhance soil infiltration from runoff.</li><li>▪ Include in the design SMART growth design of reduced parking requirements, narrow streets for reduction of impervious surfaces and mixed land use.</li></ul></li><li>○ Implement vegetated buffer strips and set back distances of at least 150m or approx. 450ft. for impervious areas along water bodies.</li><li>○ Development designs that implement the collection of runoff for infiltration into the soil.<ul style="list-style-type: none"><li>▪ These practices have the highest documented pollutant removal efficiency, eliminating nearly all lead, zinc and solids and more than 50% of total nitrogen and phosphorous loads.</li></ul></li><li>○ Implement more routine street sweeping schedule<ul style="list-style-type: none"><li>▪ Street sweeping implemented once a week on highways and every 3 days in residential areas removes 10% to 60% of solids and nutrients.</li></ul></li><li>○ Manage urban pet waste in public areas. This will assist in reducing pathogen loads.</li><li>○ Stormwater management needs to be integrated into comprehensive water management scheme to address water supply and sewage treatment in addition to meeting the communities NPDES Phase II Stormwater permit.<ul style="list-style-type: none"><li>▪ Protecting public health by reducing urban stormwater runoff and associated nonpoint source pollution makes sense as a complement to water treatment infrastructure and health care interventions.</li></ul></li></ul>