



# **BROWNFIELDS: FROM REDEVELOPMENT TO REVITALIZATION**

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Science, Engineering, &  
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# **Brownfields: From Redevelopment to Revitalization**

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## **Preface**

It is a pleasure to provide the Delaware General Assembly and the citizens of Delaware with this report. As part of the Science, Engineering and Technology Services Program, this report surveys “best practices” among brownfields programs across the country which have pioneered efforts to integrate community participation, environmental justice and sustainable development into their brownfields programs. It reviews Delaware’s ongoing brownfields efforts and uses the strategies others have employed to make recommendations for Delaware’s brownfields program. The Center for Energy and Environmental Policy (CEEP) is solely responsible for the findings and recommendations in this report.

We hope that this report will be useful for your discussions and deliberations related to brownfields policy and planning in Delaware.

John Byrne  
Director and  
Distinguished Professor of  
Energy and Climate Policy



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## Executive Summary

The U.S. Environmental Protection Agency started the first national brownfields program in 1993, providing “seed money” as an incentive for local governments to engage in revitalization efforts by facilitating the brownfields process (EPA, 2012a). The program was expanded through the Brownfields Tax Incentive Act (1997) and the Small Business Liability Relief and Brownfields Revitalization Act (2002) (EPA, 2012b).

“Years ago, brownfields were seen primarily as undesirable contaminated properties that often sat idle and contributed to blight. Today, many communities recognize that while brownfields are contaminated properties, they can also be important community assets that present a tremendous opportunity for community revitalization.” (EPA’s *Brownfields Federal Program Guide 2013*, p. iii)

At the program’s outset, EPA sought to promote sustainable development and address environmental justice by examining the inequities common to brownfields communities.

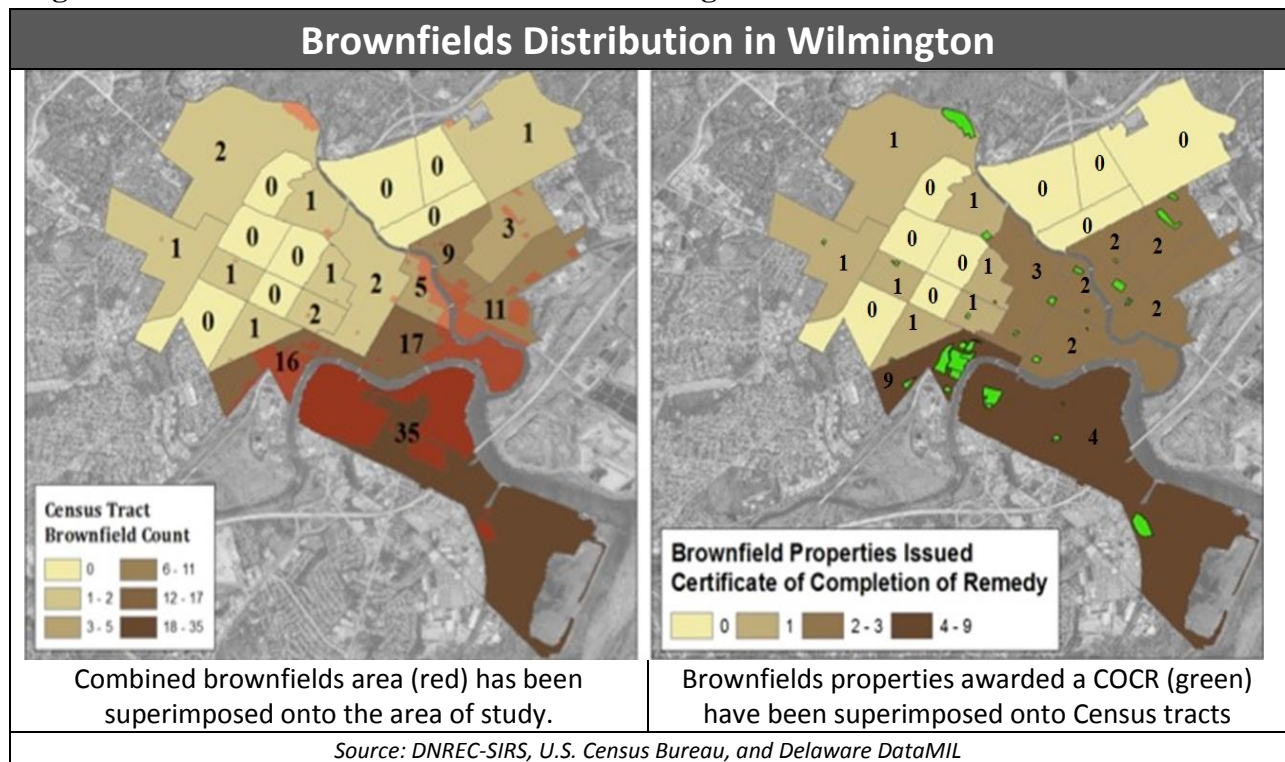
The EPA has emphasized the importance of community participation from the beginning of its efforts to revitalize brownfields communities. Applicants for the brownfields program are required to demonstrate how projects will both involve and benefit local residents to ensure equitable development outcomes (EPA, 2013b). Moreover, community participation, in the EPA’s view, should be proactive, not reactive. For participation to be meaningful, residents must be given the power to steer redevelopment for “the improvement of the public health and safety, economy, and environment of the targeted communities” (EPA, 2013b). In 2010, EPA created the Brownfields Area-Wide Planning (BF AWP) program to further help communities provide direction for improvements that are: protective of public health and the environment; economically viable; and reflective of the community’s vision for the area (EPA BF AWP Fact Sheet, 2012).

Between 1993 and 2012, the EPA Brownfields Program has awarded \$968.7 million in competitive grants and close to \$500 million in noncompetitive grants (EPA, 2013c; p. 1). It has funded more than 20,000 brownfields assessments and completed more than 800 cleanups throughout the country. It estimates that \$17.79 has been leveraged for every program dollar spent, creating more than 87,000 jobs related to cleanup and redevelopment (EPA, 2013d; p. 1). While these accomplishments are noteworthy, only a fraction of the total number of brownfields have been assessed and remediated. Despite a twenty year effort to address brownfields, EPA estimates there are more than 450,000 brownfields sites remaining in the country (EPA, 2012a; p. 1). Other estimates place the number closer to one million properties (Greenberg & Hollander, 2006; p. 277).

## The State of Brownfields in Delaware

Brownfields assessment, remediation and redevelopment still remain important challenges for Delaware. This is especially true for its largest city—Wilmington. Of the 184 brownfields sites that have been identified in Delaware, 108 are located within the City. Many are concentrated in South and East Wilmington, along the Christina and Brandywine riverfronts. Only 35 sites in Wilmington have received certificates of completion remedy (COCR), meaning they require no further cleanup action or have entered into long-term stewardship agreements. Figure ES-1 shows the brownfields distribution within Wilmington.

**Figure ES-1: Brownfields Distribution in Wilmington**



Overall, brownfields account for nearly twenty percent of all land in Wilmington. As such they present an environmental risk for community residents that live near them. In addition, they limit tax revenue generation and employment opportunities. Analysis of the socioeconomic situation confronting brownfields communities in Wilmington highlights the convergence of environmental justice, community participation and sustainable development concerns.

## **Brownfields and Socioeconomic Indicators**

In *The Brownfields Challenge* (1999), the Center for Energy and Environmental Policy (CEEP) revealed these links with respect to Wilmington. In particular, the study showed high correlations between brownfields locations and communities with a high percentage of minority residents, people living in poverty and communities with above average populations of children five years of age and younger (CEEP, 1999).

In a 2005 report prepared by CEEP for the Urban Health and Environmental Learning Project (UHELP), soil sample data were merged with tax parcel shapefiles to visualize the incidence of contamination by socioeconomic variables. For the first time, clear evidence was provided of the nature and extent of Delaware's most acute environmental justice problem stemming from brownfields. The study found 26 percent of statewide documented contamination is located in Wilmington despite the fact that only 9 percent of the State's population resides in the City (CEEP, 2005). For the City's African-American neighborhoods, the disproportionate risk was found to be even higher.

The study found that over 90 percent of Wilmington's Eastside residents were African-American and faced the daily risk of 44 percent of the parcel area having documented contamination (CEEP 2005). In Southbridge, the threat was more acute. With a population that is 82 percent African-American, 76 percent of the parcels in Southbridge contain documented contamination (CEEP, 2005). For example, arsenic levels in soils from the neighborhoods exceed the uniform risk-based standard of the U.S. EPA,<sup>1</sup> and environmental concern amplified by the fact that over 20% of the resident population is under 5 years of age and therefore at greater risk of health complications (CEEP 2005). The current study did not examine soil sample data but found the same pattern of socioeconomic risk.

The accompanying table, Table ES-1, summarizes the data on socioeconomic indicators and provides a geographic comparison looking at brownfields areas, Certificate of Completion of Remedy (COCR) areas, Wilmington as a whole, and New Castle County. As the table reveals, across a wide range of socio-economic indicators, brownfields communities in the City of Wilmington comprise:

- Higher rates of minority residents;
- Higher unemployment and poverty rates;
- Higher crime and vacancy rates;
- Lower income and owner-occupied housing rates;
- Higher rates of single-female headed households and single-female headed households with children 18 and under;

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<sup>1</sup> The EPA's uniform risk-based standards provide guidance to jurisdictions. Local factors and conditions such as parcel designation must also be considered in order to develop site-specific assessments.

- Higher rates of children 5 years old and under;
- Lower rates of educational attainment (both high school and college degrees); and
- Lower rates of participation opportunity.

The accompanying figure, Figure ES-2, displays selected socioeconomic characteristics of community residents within brownfields across Wilmington to illustrate the overall make-up of brownfields communities. In the Wilmington study area, brownfields communities are largely made up of minority residents (81.6 percent), many residents live below the poverty level (37.2 percent), a high percentage of households are led by single-females (36.2 percent) and a disproportionate percentage of the population are children five years old and younger (9.0 percent).<sup>2</sup>

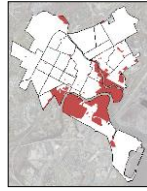
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<sup>2</sup> A more detailed examination of these socioeconomic characteristics is provided on pages 76-87 on the full report.



**Table ES-1 Socioeconomic Indicators of Brownfields Communities**

**Socioeconomic Indicators  
Geographic Comparison**



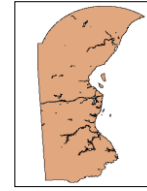
**Brownfields  
Areas**



**COCR Area**



**Wilmington**



**New Castle  
County**

**Economic**

Percent below poverty	<b>37.2</b>	23.0	23.9	10.3
Percent unemployed	<b>16.7</b>	11.7	10.8	6.9
Median household income	<b>\$30,641</b>	\$50,934	\$38,386	\$62,474
Per capita income	<b>\$17,035</b>	\$27,271	\$25,228	\$31,220

**Housing and Crime**

Total crime index	<b>420</b>	391	362	108
Percent owner occupied housing	<b>32.4</b>	49.3	47.6	70.5
Percent vacant housing	<b>21.2</b>	16.2	14.7	8.0
Median rent	<b>\$750</b>	\$979	\$872	\$987

**Families and Children**

Percent female head of household (HoH)	<b>36.2</b>	26.5	23.6	14.1
Percent female HoH with children	<b>27.1</b>	17.1	14.9	8.1
Percent population under 5 years age	<b>9.0</b>	6.3	6.7	6.3

**Race**

Percent Latino or Hispanic	<b>4.3</b>	8.0	11.5	8.1
Percent Caucasian	<b>18.4</b>	40.3	31.9	63.0
Percent African American	<b>75.1</b>	48.6	53.8	22.9
Percent Native American	<b>0.01</b>	0.0	0.3	0.2
Percent Asian	<b>0.3</b>	0.5	0.7	4.2
Percent minority	<b>81.6</b>	<b>59.7</b>	<b>68.1</b>	<b>37.0</b>

**Educational Attainment**

Percent with high school diplomas	<b>76.5</b>	81.2	80.5	88.4
Percent with Bachelor's or higher	<b>12</b>	19.8	25.1	32.4

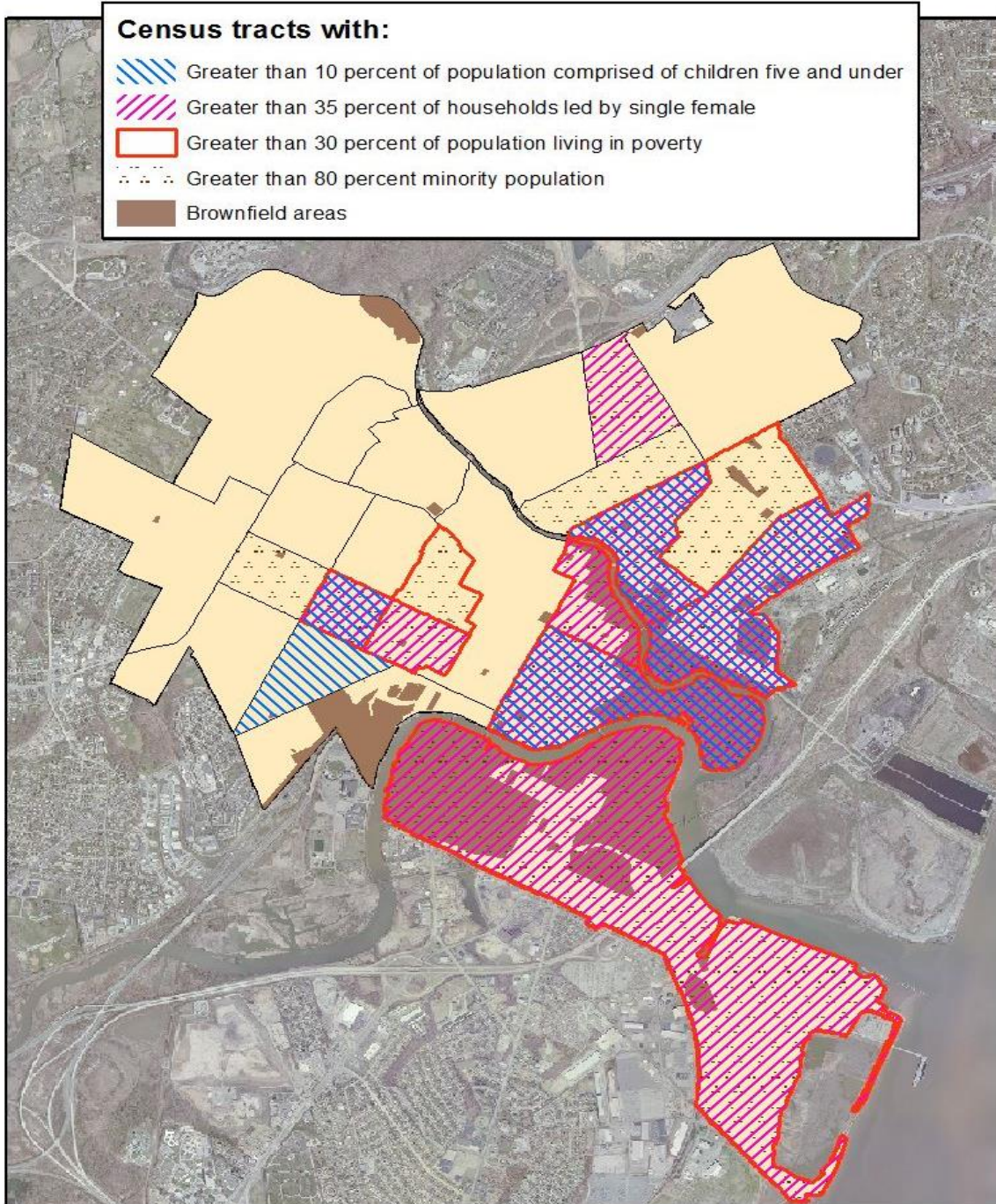
**Participation Opportunity Index**

Percent households own computer	<b>55.6</b>	64.0	63.8	80.6
Percent households with Internet access	<b>52.9</b>	60.0	60.7	78.1
Percent households own cell phone	<b>73.9</b>	79.4	79.0	89.0
Percent households own vehicle	<b>66.4</b>	81.3	75.7	92.3
Participation Opp. Index (max=400)	<b>248.8</b>	284.7	279.2	340.0

**Figure ES-2: Socioeconomic Indicators and Brownfields Communities**

## Minorities, Poverty, Single-Female Headed Households and Young Children in Brownfields

Poverty and family composition in relation to brownfields in Wilmington



Brownfields areas (brown) have been superimposed onto Census tracts

Sources: American Community Survey: Selected Economic Characteristics, 2006-2010, 5-year estimates; American Community Survey: Selected Social Characteristics, 2006-2010, 5-year estimates; American Community Survey: Demographic and Housing Estimates, 2006-2010, 5-year estimates; DNREC; Delaware DataMIL

## **Delaware's Brownfields Efforts**

Brownfields assessment, remediation and redevelopment efforts in Delaware have been ongoing for more than 20 years. In 1990 the Delaware General Assembly enacted the Hazardous Substance Cleanup Act (HSCA), the first state legislation to directly address the remediation of properties contaminated by hazardous and toxic substances. Since then, the State, under the direction of the Department of Environmental Resources and Environmental Control (DNREC), has enacted legislation, put in place policies and devoted significant resources to address legacy pollutants and brownfields issues in Delaware.

Three agencies are primarily involved with brownfields efforts: DNREC's Site Investigation and Restoration Section (DNREC-SIRS), the Delaware Economic Development Office (DEDO) and the Mayor's Office of Economic Development (MOED) in Wilmington. Wilmington has specific standing because it is home to the bulk of the State's brownfields. In 2005, the state of Delaware created the Brownfields Development Program (BDP). It allowed developers which enter into a Brownfield Development Agreement (BDA) to qualify for monetary assistance, tax incentives, and conditional liability protection once remediation was completed (HSCA - 7 Del. Chapter 91).

Overall, Delaware's brownfields focus relies on an incentive-based model. While the State retains the authority to pro-actively clean sites that pose immediate environmental or health risks, since 2005, brownfields redevelopment has focused on harnessing the power of the market, using an array of grants, loans and tax breaks to entice investors to redevelop contaminated properties. Together, DNREC-SIRS and DEDO have spent more than \$33 million on brownfields assessment, remediation and redevelopment activities between 1994 and 2012 (Leckie & Hall, 2013; Whaley, 2013). The majority of this funding has come from the HCSA fund, noncompetitive grants from the EPA, and competitive grants from the EPA for specific projects (HAC, 2013b; Bartel, 2013).

In 2010, the Center for Applied and Demography & Survey Research (CADSR) at the University of Delaware released *Economic Impact on Delaware's Economy: The Brownfield Program* (2010), which documented several positive economic impacts of brownfields redevelopment. Among its findings, CADSR linked brownfields redevelopment to increased property values (by \$455 million between 1998-2010 in New Castle County), increased tax revenues (\$2.7 million collected in the City of Wilmington in 2008), increased GDP (an additional \$349 million) and job growth (769 jobs in New Castle County) (Brown, Laznik, & Ratledge, 2010).

Despite this economic growth, unemployment and poverty have increased in Wilmington over the past decade (U.S. Census Bureau, 2000; U.S. Census Bureau, 2011d). Moreover, serious questions remain regarding the equity of brownfields redevelopment and its overall impacts on

brownfields residents. Citing just one example, there is no evidence to show that brownfields residents have benefitted from increased employment opportunities in Wilmington.

The persistence of brownfields properties and the equity issues involved, particularly in the City of Wilmington, provides the context for the study which follows. This report highlights the need to address environmental justice, community participation and sustainable development concerns within the context of brownfields revitalization.

## **Key Findings**

The original purpose of EPA's Brownfields Pilot Program was to provide different models that states and municipalities, engaged in their own brownfields efforts, could learn from. The experience offered by other brownfields programs can be a valuable source of information for the City of Wilmington and Delaware as a whole, as they seek to continue addressing brownfields issues in an environmentally just and sustainable manner.

Ten brownfields programs were selected for inclusion in this report. They are: Burlington, VT; Charleston, SC; Cleveland, OH; East Palo Alto, CA; Milwaukee, WI; Pittsburgh, PA; Portland, OR; Rochester, NY; Salt Lake City, UT; and Trenton, NJ. The criteria used in the report were selected based on the importance they play in achieving meaningful community participation, addressing environmental justice concerns and pursuing sustainable and equitable development throughout the brownfields assessment, remediation and revitalization process.

These principles were supported by literature and research from the EPA Office of Brownfields and Land Revitalization, the EPA National Environmental Justice Advisory Council (NJEAC), HUD-DOT-EPA Partnership for Sustainable Communities and previous work by the Center for Energy and Environmental Policy. Programs were analyzed based on the following criteria: *leadership and coordination; funding mechanisms; community involvement; economic aspects; environmental aspects; social aspects; and access and transparency.*

The following comprise important lessons learned from the 10 case study cities examined:

- Brownfields programs in the ten selected cities suggest that success in emphasizing environmental justice, community participation and sustainable development can depend on the extent to which these themes are integrated into the brownfields program planning process from the outset. Proactive commitment to the needs and goals of brownfields communities, particularly in identifying and overcoming obstacles to involvement, were found to be helpful to those cities' efforts to emphasize environmental justice, community participation and sustainable development.

- Two common characteristics among effective brownfields programs in the case study group were a high level of coordination among stakeholders and the identification and leveraging of funding opportunities among multiple levels (including for personnel focused on brownfields program planning). This finding highlights the importance of stakeholder coordination, multi-source funding, and dedicating personnel resources towards the brownfields process.
- Brownfields programs in the ten cities selected as case studies often sought to provide new opportunities for participation that might enhance the ability of community residents to take part in the brownfields program planning process. Innovative participation mechanisms and educational support are essential to promote and sustain community participation throughout the brownfields process.
- Those brownfields programs that pursued environmental justice, community participation and sustainable development goals as part of a broader revitalization plan went beyond aggregate economic goals and examined the direction of economic benefits as well as the environmental and social aspects of redevelopment activities in order to address community needs. Brownfields programs can define programmatic “success” and “successful” redevelopment outcomes in a broader way by treating brownfields revitalization as an appropriate means to identify and implement projects specifically designed to meet the needs of the affected communities.
- In order to target economic benefits and promote environmental and social aspects, brownfields programs adopted a number of strategies. Several cities put in place specific procedures, rules and regulations to promote and evaluate their goals. Procedures, rules and regulations which operationalize and evaluate the economic, environmental and social aspects of brownfields revitalization can be helpful to brownfields program planning.
- Central to promoting community awareness, building community trust, and sustaining community involvement throughout the brownfields process is access to and transparency of information to community members. A transparent flow of information from government entities to community residents in an easy-to-access user-friendly manner was found to be by several case study cities to facilitate participatory decision-making in the brownfields program planning process.

## **Recommendations**

CEEP's research findings indicate that Delaware may wish to consider reconfiguring its brownfields efforts to address environmental justice, community participation and sustainable development concerns. CEEP recommends the State's use of a definition of brownfields as more than an economic problem. One step in this direction is a revitalization plan which could address these concerns. Such an effort could produce a new statement of interlinked goals. The following are examples of how Delaware could recognize these interlinked goals:

- **Seek to raise awareness about the opportunities environmental justice, community involvement and sustainable development of brownfields redevelopment among and between different levels of government, different agencies, private interests and nonprofit/community groups;**
- **Pursue multi-source funding, including for personnel dedicated to brownfield program planning;**
- **Develop a specific plan to institutionalize and sustain community participation throughout the brownfields revitalization process via innovative mechanisms to attract community interest, overcome obstacles to participation and to promote educational support;**
- **Examine ways to define successful redevelopment so that the goals of environmental justice, community participation and sustainable development are explicitly recognized;**
- **Adopt formal procedures and requirements to operationalize and evaluate the economic, environmental and social aspects of brownfields revitalization; and**
- **Enhance transparency in communications in and the transfer of information between different actors (governmental, private, nonprofit/community) regarding brownfields.**

## I. Overview

Development and redevelopment, particularly revitalization of urban centers, remain popular but controversial issues in the United States. All call for economic growth and the provision of greater economic opportunities. At the same time no one can deny that past methods of development which focused almost exclusively on short-term economic goals created environmental degradation and social inequities that exist to this day. The creation and persistence of “brownfields” properties in urban centers is one product of this short-sighted means of development. Despite a twenty year effort to address brownfields, the EPA estimates there are more than 450,000 brownfields sites remaining in the country, while other estimates place the number closer to one million (EPA, 2012a; p. 1: Greenberg & Hollander, 2006; p. 277).

“Abandoned commercial and industrial properties called ‘brownfields’ which dot the urban landscape are overwhelmingly concentrated in people of color, low-income indigenous peoples, and otherwise marginalized communities. By their very nature, brownfields are inseparable from issues of social equity, racial discrimination and urban decay...the inescapable context for examination of the brownfields issue is environmental justice and urban revitalization.” (NEJAC’s *Public Dialogues*, 1996: 18)

“Sustainable development” goes beyond past models of development. It takes a holistic view and recognizes the interconnection between economic, environmental and social concerns. This provides a new way to examine the question of urban decay and brownfields. Through the lens of sustainable development, brownfields are the result of many interrelated problems, among them—our industrial legacy, environmental degradation, urban sprawl, residential segregation, disinvestment in urban areas, a declining urban tax base, and chronic socioeconomic, racial and class divisions. Brownfields become linked with “environmental justice” issues.

In 1987, the United Church of Christ Commission for Racial Justice was the first to establish a connection between race, income and the siting of hazardous waste and toxic facilities (UCC, 1987). Numerous studies followed that documented environmental inequities with regards to exposure to contaminants, the siting of facilities, recognition of environmental threats and enforcement actions by the government (Bullard, 1990; Lavelle and Coyle, 1992; National Wildlife Fund, 1994; Kratch et al, 1995).

In its 1992 report on *Environmental Equity*, the EPA found that people of color and low-income communities experience disproportionately high exposure to toxic pollutants across the United States (EPA, 1992). The EPA created the National Environmental Justice Advisory Council (NEJAC) in 1993 to begin addressing environmental justice concerns. Executive Order 12898, issued by President Clinton on February 11, 1994, declared that “all communities and persons

across this nation should live in a safe and healthy environment” (Executive Order 12898, 1994). It required all federal agencies to integrate environmental justice concerns into their missions.

**Table 1: Definitions of Important Terms**

<b>Legacy Pollutants</b> — <i>Contaminants that have been left in the environment from industries that are no longer discharging them. These contaminants are often hard to break down and they persist in the environment. They Are a hazard to plant, animal and human health.</i>
<b>Brownfields</b> — <i>Properties where the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, contaminant or pollutant.</i>
<b>Environmental Justice</b> — <i>The fair treatment and meaningful involvement of all people regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies.</i>
<b>Sustainable Development</b> — <i>Development which meets the needs of the present without compromising the ability of future generations to meet their own needs.</i>
<b>Urban Revitalization</b> — <i>A bottom-up process that proceeds from a community-based vision of its needs and aspirations. It seeks to build capacity, create partnerships and mobilize resources to make the vision a reality.</i>
World Commission on Environment and Development , Our Common Future (1987), EPA Environmental Justice home at <a href="http://www.epa.gov/compliance/environmentaljustice/index.html">http://www.epa.gov/compliance/environmentaljustice/index.html</a> , EPA Brownfields home at <a href="http://www.epa.gov/brownfields/index.html">http://www.epa.gov/brownfields/index.html</a> , NEJAC Public Dialogues (1996)

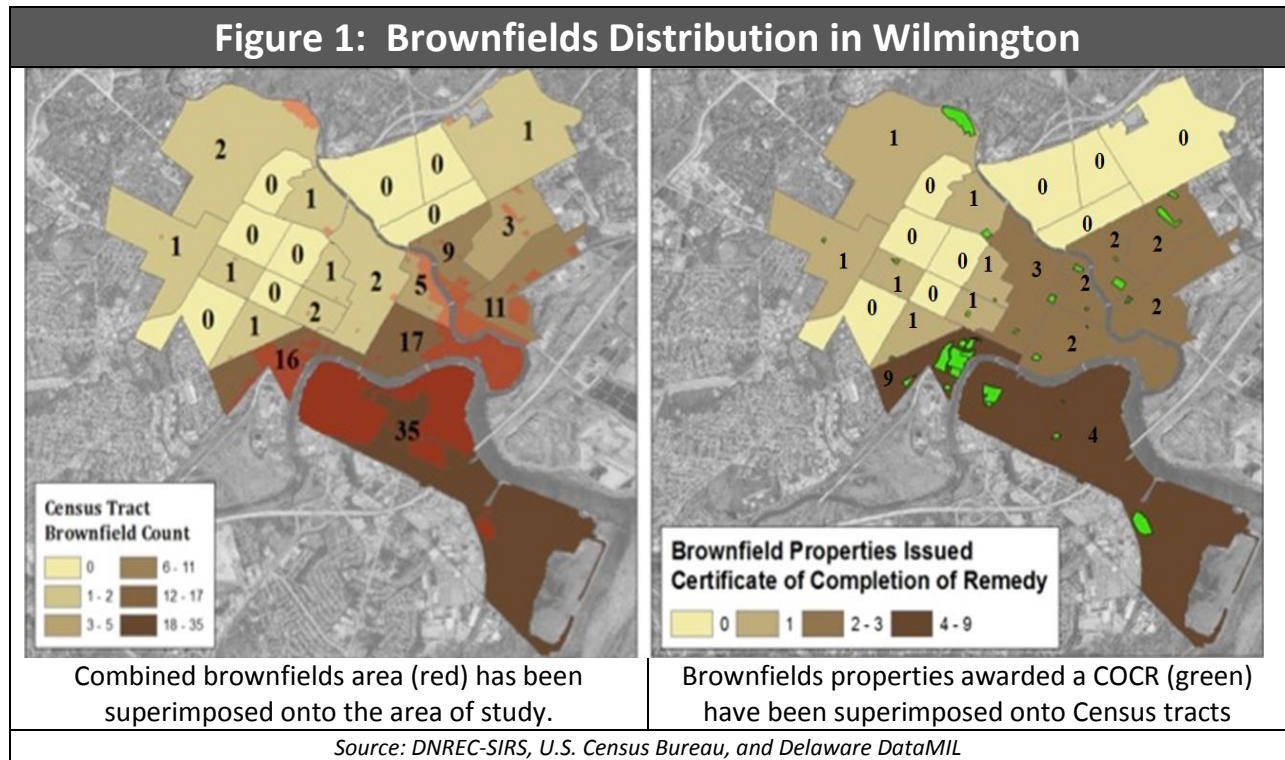
In the 1990s, the federal government, under the direction of the EPA, identified brownfields redevelopment as an important component of “urban revitalization.” EPA started the brownfields pilot project program in 1993 which provided “seed money” as an incentive for local governments to engage in urban redevelopment by facilitating the brownfields process (EPA, 2012a). The program was expanded through the Brownfields Tax Incentive Act (1997) and the Small Business Liability Relief and Brownfields Revitalization Act (2002) (EPA, 2012b).

As of 2012, the EPA Brownfields Program has awarded \$968.7 million in competitive grants and close to \$500 million in noncompetitive grants (EPA, 2013c; p. 1). It has funded more than 20,000 brownfields assessments and completed more than 800 cleanups. The EPA estimates that \$17.79 has been leveraged for every program dollar spent, creating more than 87,000 jobs related to cleanup and redevelopment (EPA, 2013d; p. 1). Despite the money invested in the program and its accomplishments, however, only a fraction of the total number of brownfields have been assessed and remediated.

The EPA sought to promote sustainable development and address environmental justice concerns by examining the inequities common to brownfields communities at the program’s outset. In conjunction with NEJAC, the EPA has emphasized the importance of community participation.



Applicants are required to demonstrate how projects will both involve and benefit local residents to ensure equitable development outcomes (EPA, 2013b). Moreover, community participation, in the EPA’s view, should be proactive, not reactive. That is, participation should not be limited to soliciting feedback on predetermined projects. For participation to be meaningful, residents must be given the power to steer redevelopment for “the improvement of the public health and safety, economy, and environment of the targeted communities” (EPA, 2013b).



Brownfields assessment, remediation and redevelopment still remain important challenges for Delaware. This is especially the case with regards to Wilmington. Of the 184 brownfields sites that have been identified in Delaware, 108 of them are located within the City. Many of them are concentrated in South and East Wilmington, along the Christina and Brandywine riverfronts. Only 35 of these sites have received certificates of completion remedy (COCR), meaning they require no further cleanup action or have entered into long-term stewardship agreements.

Overall, brownfields account for nearly twenty percent of all land in Wilmington. As such they present an environmental risk for community residents that live near them. In addition, they limit tax revenue generation and employment opportunities. Analysis of the socioeconomic situation confronting brownfields communities in Wilmington highlights the convergence of environmental justice, community participation and sustainable development concerns.

In *The Brownfields Challenge* (1999), the Center for Energy and Environmental Policy (CEEP) revealed these links with respect to Wilmington. In particular, the study showed high

correlations between brownfields locations and communities with a high percentage of minority residents, people living in poverty and communities with above average populations of children five years of age and younger (CEEP, 1999).

In a 2005 report prepared by CEEP for the Urban Health and Environmental Learning Project (UHELP), soil sample data were merged with tax parcel shapefiles to visualize the incidence of contamination by socioeconomic variables. For the first time, clear evidence was provided of the nature and extent of Delaware's most acute environmental justice problem stemming from brownfields. The study found 26 percent of statewide documented contamination is located in Wilmington despite the fact that only 9 percent of the State's population resides in the City (CEEP, 2005). For the City's African-American neighborhoods, the disproportionate risk was found to be even higher.

The study found that over 90 percent of Wilmington's Eastside residents were African-American and faced the daily risk of 44 percent of the parcel area having documented contamination (CEEP 2005). In Southbridge, the threat was more acute. With a population that is 82 percent African-American, 76 percent of the parcels in Southbridge contain documented contamination (CEEP, 2005). For example, arsenic levels in soils from the neighborhoods exceed the uniform risk-based standard of the U.S. EPA,<sup>3</sup> and environmental concern amplified by the fact that over 20% of the resident population is under 5 years of age and therefore at greater risk of health complications (CEEP 2005). The current study did not examine soil sample data but found the same pattern of socioeconomic risk.

Table 2 summarizes the data on socioeconomic indicators and provides a geographic comparison looking at brownfields areas, Certificate of Completion of Remedy (COCR) areas, Wilmington as a whole, and New Castle County. As the table reveals, across a wide range of socio-economic indicators, brownfields communities in the City of Wilmington comprise:

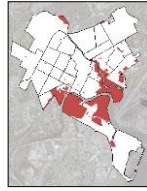
- Higher rates of minority residents;
- Higher unemployment and poverty rates;
- Higher crime and vacancy rates;
- Lower income and owner-occupied housing rates;
- Higher rates of single-female headed households and single-female headed households with children 18 and under;
- Higher rates of children 5 years old and under;
- Lower rates of educational attainment (both high school and college degrees); and
- Lower rates of participation opportunity.

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<sup>3</sup> The EPA's uniform risk-based standards provide guidance to jurisdictions. Local factors and conditions such as parcel designation must also be considered in order to develop site-specific assessments.

**Table 2: Data Summary of Socioeconomic Indicators**

**Socioeconomic Indicators  
Geographic Comparison**



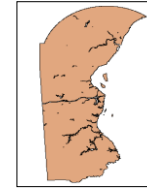
**Brownfield  
Areas**



**COCR Area**



**Wilmington**



**New Castle  
County**

**Economic**

Percent below poverty	<b>37.2</b>	23.0	23.9	10.3
Percent unemployed	<b>16.7</b>	11.7	10.8	6.9
Median household income	<b>\$30,641</b>	\$50,934	\$38,386	\$62,474
Per capita income	<b>\$17,035</b>	\$27,271	\$25,228	\$31,220

**Housing and Crime**

Total crime index	<b>420</b>	391	362	108
Percent owner occupied housing	<b>32.4</b>	49.3	47.6	70.5
Percent vacant housing	<b>21.2</b>	16.2	14.7	8.0
Median rent	<b>\$750</b>	\$979	\$872	\$987

**Families and Children**

Percent female head of household (HoH)	<b>36.2</b>	26.5	23.6	14.1
Percent female HoH with children	<b>27.1</b>	17.1	14.9	8.1
Percent population under 5 years age	<b>9.0</b>	6.3	6.7	6.3

**Race**

Percent Latino or Hispanic	<b>4.3</b>	8.0	11.5	8.1
Percent Caucasian	<b>18.4</b>	40.3	31.9	63.0
Percent African American	<b>75.1</b>	48.6	53.8	22.9
Percent Native American	<b>0.01</b>	0.0	0.3	0.2
Percent Asian	<b>0.3</b>	0.5	0.7	4.2
Percent minority	<b>81.6</b>	<b>59.7</b>	<b>68.1</b>	<b>37.0</b>

**Educational Attainment**

Percent with high school diplomas	<b>76.5</b>	81.2	80.5	88.4
Percent with Bachelor's or higher	<b>12</b>	19.8	25.1	32.4

**Participation Opportunity Index**

Percent households own computer	<b>55.6</b>	64.0	63.8	80.6
Percent households with Internet access	<b>52.9</b>	60.0	60.7	78.1
Percent households own cell phone	<b>73.9</b>	79.4	79.0	89.0
Percent households own vehicle	<b>66.4</b>	81.3	75.7	92.3
Participation Opp. Index (out of 400)	<b>248.8</b>	284.7	279.2	340.0

In 2010, the Center for Applied and Demography & Survey Research (CADSR) at the University of Delaware released *Economic Impact on Delaware's Economy: The Brownfield Program* which documented several positive economic impacts of brownfields redevelopment. Among its findings, CADSR linked brownfields redevelopment to increased property values (by \$455 million between 1998-2010 in New Castle County), increased tax revenues (\$2.7 collected in the City of Wilmington in 2008), increased GDP (an additional \$349 million) and job growth (769 jobs in New Castle County) (Brown, Laznik, & Ratledge, 2010).

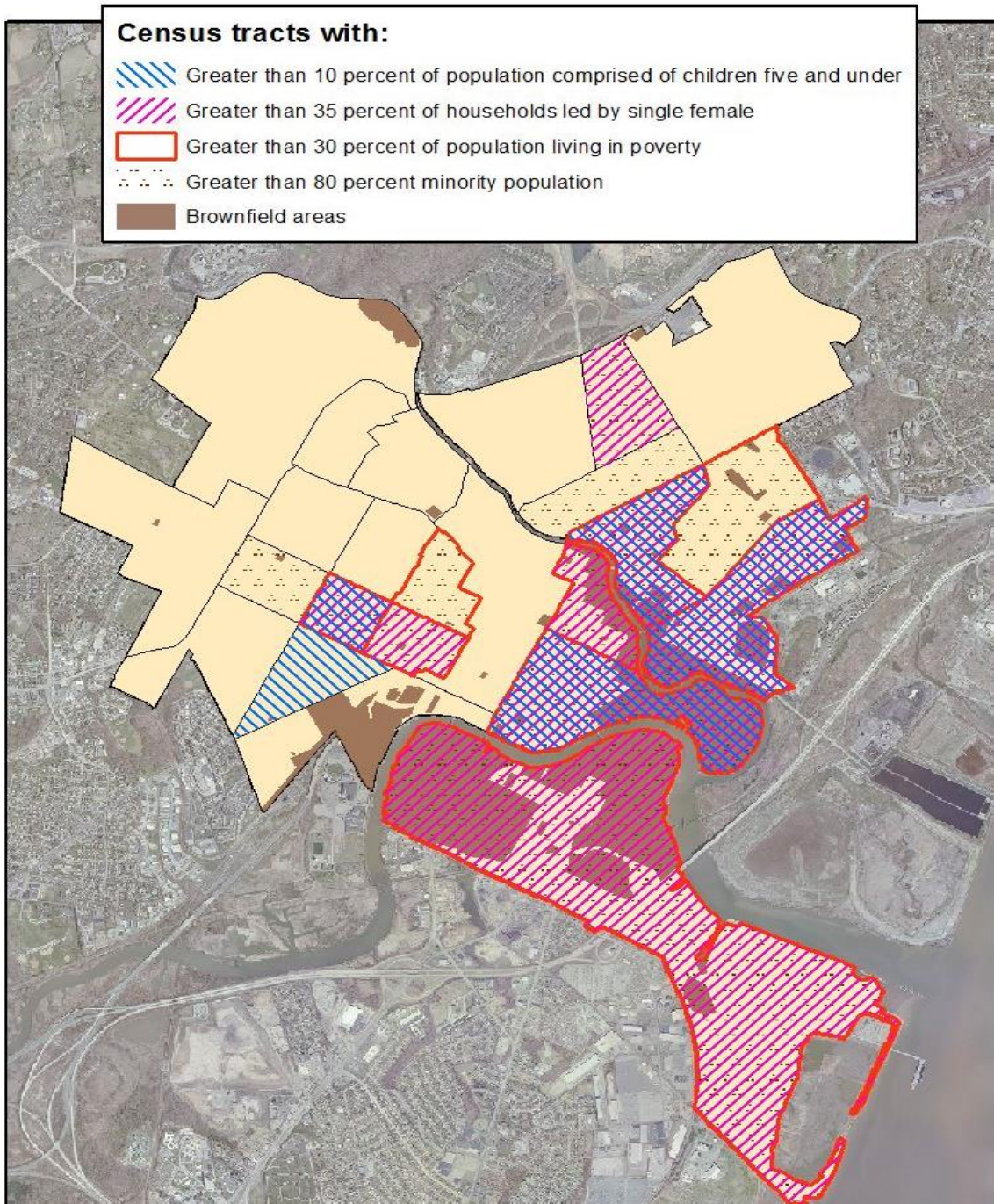
Despite this economic growth, unemployment and poverty have increased in Wilmington over the past decade (U.S. Census Bureau, 2000; U.S. Census Bureau, 2010d). Moreover, serious questions remain regarding the equity of brownfields redevelopment and its overall impacts on brownfields residents. Citing just one example, there is no evidence to show that brownfields residents have benefitted from increased employment opportunities in Wilmington.

Figure 2 displays selected socioeconomic characteristics of community residents within brownfields across Wilmington to illustrate the overall make-up of brownfields communities. In the Wilmington study area, brownfields communities are largely made up of minority residents (81.6 percent), many residents live below the poverty level (37.2), a high percentage of households are led by single-females (36.2 percent) and a disproportionate percentage of the population are children five years old and younger (9.0).

Both the State of Delaware and the City of Wilmington have engaged in brownfields redevelopment efforts for more than twenty years. The persistence of brownfields properties, particularly the City of Wilmington, provides the context for the study which follows. This report highlights the need to address environmental justice, community participation and sustainable development concerns within the context of brownfields efforts as a central component in turning urban redevelopment into urban revitalization.

## Figure 2: Minorities, Poverty, Single-Female Headed Households and Young Children in Brownfields

Poverty and family composition in relation to brownfields in Wilmington



Brownfields areas (brown) have been superimposed onto Census tracts

Sources: American Community Survey: Selected Economic Characteristics, 2006-2010, 5-year estimates; American Community Survey: Selected Social Characteristics, 2006-2010, 5-year estimates; American Community Survey: Demographic and Housing Estimates, 2006-2010, 5-year estimates; DNREC; Delaware DataMIL



### III. The Brownfields Challenge: From Redevelopment to Revitalization

Urban redevelopment and urban revitalization are very different from one another. The first follows in the footsteps of past development models and seeks to promote another round of economic growth to the exclusion of other concerns in a top-down manner. This is a short-term and unsustainable approach which only addresses environmental and social issues as secondary and separate concerns. Moreover, this method of development does not seek to integrate the needs, views, knowledge and concerns of community residents into its framework. The second seeks to integrate economic, environmental, and social issues under an umbrella of equity by recognizing that they are all interconnected. It focuses on a holistic vision of the community, one in which civic engagement is paramount. This means that those most impacted by decisions should have a meaningful say in them. In this manner, the context for examining and promoting urban revitalization is intertwined with environmental justice, community participation and sustainable development.

“Urban Revitalization is a bottom-up process. It proceeds from a community-based vision of its needs and aspirations and seeks to build capacity, build partnerships, and mobilize resources to make the vision a reality. Revitalization does not lead to displacement of communities through gentrification that often results from redevelopment policies. Governments must not simply view communities as an assortment of problems but also as a collection of assets. There must be opportunities for full articulation of the importance of public participation in brownfields issues...without meaningful community involvement, urban revitalization simply becomes urban redevelopment.” (NEJAC’s *Public Dialogues*, 1996: 12)

Brownfields and the issues that develop around them provide a timely example of the difference between urban redevelopment and urban revitalization. Brownfields were created as a byproduct of the past method of development that led to environmental degradation and growing social inequities in urban centers. The persistence of brownfields and the conditions brownfields communities and their residents face, despite repeated attempts at redevelopment, suggest a need for a broader perspective.

The EPA’s Brownfields Program was intended to facilitate this shift from redevelopment to revitalization. It seeks to promote environmental justice, community participation and sustainable development as core elements of this new direction. Applicants for grant funding are required to demonstrate how brownfields project proposals will both involve and benefit local residents to ensure equitable development outcomes (EPA, 2013b). Moreover, community participation, in the EPA’s view, should be proactive, not reactive. For participation to be meaningful, residents must be given the power to steer redevelopment to (EPA, 2013b)

*“Proposals will be evaluated on the extent to which the project’s anticipated outcomes promote the general welfare through the improvement of the public health and safety, economy, and environment of the targeted communities and how these outcomes will contribute to [the] overall community ‘vision’ for the revitalization of brownfield sites.” (EPA, 2013b)*

## **A. Environmental Justice and Brownfields**

Environmental justice has its roots in the Civil Rights movement of the 1960s. It developed as a result of minority communities challenging the repeated siting of locally-unwanted-land-uses (LULUs) disproportionately in their neighborhoods. The 1982 North Carolina decision to construct another toxic waste landfill in a minority and low-income community in Warren County galvanized the environmental justice movement. In 1987, the United Church of Christ Commission for Racial Justice provided the first research which documented the connection between race, income, and the siting of hazardous waste and toxic facilities (UCC, 1987). Further evidence of this discriminatory pattern in environmental risk followed.

“For far too long, many minority, low-income, tribal and indigenous people in the United States have experienced higher levels of environmental pollution and other social and economic burdens. These overburdened communities have generally viewed environmentalism and environmental protection as a distant calling. These burdens have led to poorer health outcomes, as well as fewer financial or advocacy opportunities to pursue many productive activities, including ‘greening’ their communities.” (EPA Office of Environmental Justice’s *Plan EJ 2014*, 2013: p. 1)

Today, the idea that people of color and low-income face significantly greater exposure to a wide array of environmental risks across the United States (as well as globally) is well documented in environmental justice literature. On the 20<sup>th</sup> anniversary of its initial study the United Church of Christ commissioned an updated report on the state of environmental justice in the United States. That report provided a number of important findings (Bullard, Mohai, Saha & Wright, 2007). Among them were:

- Racial concentrations proved to be an even more significant factor than previously believed as an indicator of toxics exposure;
- Place, particularly metropolitan areas, are at heightened risk for toxics proximity;
- Unequaled protections are afforded communities of color; and
- Government responses when it comes to remediation are often delineated along racial and socio-economic lines.



The federal government has been giving increasing consideration to environmental justice concerns for more than twenty years. In its initial report on *Environmental Equity* (1992), the EPA found that people of color and low-income experience disproportionately high exposure to toxic pollutants across the United States (EPA, 1992). In response, the Office of Environmental Justice was created in 1992 and the EPA established the National Environmental Justice Advisory Council (NEJAC) in 1993 to address environmental justice concerns.

**Table 3: Federal Environmental Justice Activities**

<b>Environmental Justice Timeline</b>
<b>1992—Office of Environmental Justice is formed</b>
<b>1993—EPA’s National Justice Environmental Council (NEJAC) is established.</b>
<b>1994—President Clinton issues Executive Order 12898, “Federal Actions to Address Environmental Justice In Minority Populations and Low-Income Populations.”</b>
<b>1996—NEJAC organizes and engages in its Public Dialogues on Urban Revitalization and Brownfields and publishes “Environmental Justice, Urban Revitalization and Brownfields: The Search for Authentic Signs of Hope” highlighting recommendations from the public dialogues.</b>
<b>2000—NEJAC produces the “Model Plan for Public Participation” to suggest strategies for community participation.</b>
<b>2003—Environmental Justice Action Plans are implemented.</b>
<b>2006—NEJAC publishes “Unintended Impacts of Redevelopment and Revitalization Efforts in Five Environmental Justice Communities” highlighting gentrification and displacement concerns.</b>
<b>2009—Environmental Justice Showcase Communities Pilot Projects are launched.</b>
<b>2011—The Plan EJ 2014 Strategy is released to provide a roadmap to integrating environmental justice into the EPA’s policies and programs.</b>
<b>2013—EPA publishes “The Plan EJ 2014 Progress Report” and NEJAC publishes “Model Guidelines for Public Participation: An Update to the NEJAC 1996 Model Plan for Public Participation” to compliment Plan EJ 2014 efforts and further facilitate public participation.</b>
<b>Source: EPA brownfields laws and statutes/laws and executive orders: <a href="http://www.epa.gov/brownfields/laws/index.htm">www.epa.gov/brownfields/laws/index.htm</a> and <a href="http://www.epa.gov/lawsregs/laws/">www.epa.gov/lawsregs/laws/</a></b>

In 1994, President Clinton issued Executive Order 12898, entitled “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations.” EO 12898 states that each federal agency needs to “make achieving environmental justice a part of its mission by identifying and addressing, as appropriate, disproportionately adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations” (Executive Order 12898, 1994).

In its definition of environmental justice, the EPA highlighted “fair treatment” and “meaningful involvement” concerns. Fair treatment means that no group should bear a disproportionate share of environmental impacts. Meaningful involvement means people should have an opportunity to participate in decisions about activities that may affect their environment and/or

“Environmental justice is the fair treatment and meaningful involvement of all people, regardless of race, color, national origin, or income with respect to the development, implementation, and enforcement of environmental laws, regulations and policies.” (EPA’s Basic Information on EJ, 2012a)

their health; their concerns should be taken into consideration in the decision-making process; their involvement should be facilitated by decision-makers; and the public’s concerns should be able to influence the decision-making process (EPA, 2012a)

The EPA’s Brownfields Program, started in 1993, is an attempt to address environmental justice concerns by serving communities that are most in need—environmentally, economically, and socially. Its goal of promoting equitable development through the assessment, cleanup and redevelopment of brownfields areas sets it apart from almost all other initiatives. The grant proposal and evaluation process was set to up to ensure that under-served communities and equitable development would be driving forces of federal brownfields efforts.

During the grant evaluation process, the EPA considers “the extent to which the grant would facilitate the identification and reduction of threats to the health or welfare of children, pregnant women, minority or low-income communities, or other sensitive populations” (EPA, 2009: 2). It also educates its staff and grant recipients (government entities, nonprofits, and communities) on the value of incorporating equitable development principles into brownfields efforts.

*“Some of these principles include: the creation of affordable housing, working with minority and women-owned businesses and environmental consulting firms, creating first source hiring ordinances, ensuring jobs with living wages, partnering with local land trusts, creating commercial linkage strategies, redeveloping brownfields into nonprofit purposes such as clinics and parks, and developing resident shareholding models.” (EPA, 2009: 2)*

EPA’s brownfields efforts have progressed over time to better address environmental justice concerns and promote equitable development. In 1995, Jobs Training Grants (now referred to as “Environmental Workforce and Job Training Grants”) were made available.<sup>4</sup> This was intended to recruit and train brownfields community residents, thereby providing them with the skills needed to obtain and retain sustainable and green jobs related to environmental assessment and

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<sup>4</sup> Between 1998 and 2010 the EPA awarded 169 Jobs Training Grants totaling \$35 million which helped fund more than 6,700 trainees (EPA, 2011)

cleanup. In 2003, Training Research and Technical Assistance Grants were made available.<sup>5</sup> These grants were designed to provide practical knowledge of brownfields topics and provide research and advice to organizations and communities throughout the brownfields process.

NEJAC's *Unintended Impacts of Redevelopment and Revitalization Efforts in Five Environmental Justice Communities* (2006) took this a step further. This report looked at the EPA's Brownfields Program and the claim that "EPA may have unintentionally exacerbated historical gentrification and displacement" as a result of its brownfields remediation and redevelopment efforts (NEJAC, 2006: i). NEJAC noted that this is a distinct possible outcome due to market dynamics. The report also provided the EPA with recommendations to address this outcome underscoring the importance of meaningful community involvement.

## B. Community Participation and Brownfields

In 1996, NEJAC and the EPA released NEJAC's *Public Dialogues on Urban Revitalization and Brownfields: Envisioning Healthy and Sustainable Communities*. The report addressed the links between environmental justice, urban revitalization and community participation. According to the report, all of the stakeholders involved recognized the importance and value of active community participation and the relevance of community knowledge in building sustainable communities.

NEJAC also subsequently published *The Model Plan for Public Participation* (1996) which provided the EPA with directions to promote public involvement in decisions that affect human health and their surrounding environment. The plan embraced two principles: that public participation should be encouraged in all aspects of environmental decision-making with all stakeholders seen as equal partners; and that the decision-making process must respect the concerns of all parties while clearly articulating goals, expectations and limitations (NEJAC's Model Plan, 1996; p. 2)

"Public participation, community involvement—whatever the term—is crucial in ensuring that decisions affecting human health and the environment embrace environmental justice. Communities affected by environmental justice issues often already face many challenges and barriers associated with meaningful involvement and adequate representation in the development, implementation and enforcement of environmental laws, regulations and policies. Many affected communities are considered to be vulnerable or sensitive populations due to factors such as cumulative exposure to toxins and pollutants, and have historically been left out of the decision-making process." (NEJAC's *Model Guidelines for Public Participation*, 2013: p. 2)

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<sup>5</sup> Six initial grants were awarded in 2003. EPA also awarded grants in 2005, 2007 and 2008 (EPA 2011).

EPA's Plan EJ 2014 and NEJAC's *Model Guidelines for Public Participation* (2013) continue to highlight the important role that community participation plays in brownfields efforts. Plan EJ 2014 is a strategy designed to further integrate environmental justice into the EPA. According to the *Plan EJ 2014 Progress Report* (2013), the goals are to: protect the environment and health in overburdened communities; empower communities to take action to improve their health and environment; and establish partnerships with local, state, tribal, and federal governments and organizations to achieve healthy and sustainable communities (EPA, 2013).

NEJAC's update to its 1996 report provides the template for Plan EJ 2014's Community Engagement Initiative. The CEI's three main objectives are to (EPA, 2013):

- Develop transparent and accessible decision-making processes to enhance meaningful community participation;
- Present information and provide technical assistance in ways will enable community stakeholders to better understand environmental issues and participate in an informed way; and
- Produce outcomes that are responsive to stakeholders' concerns and are aligned with community needs and long-term goals to the extent practicable.

NEJAC identified a number of "critical elements" needed to promote effective community engagement via the encouragement, capacity building, institutionalization and recognition of public participation. Among them these were: establishing a two-way process of distributing and receiving information; creating a system of processes and mechanisms to facilitate community outreach; recognizing the value of community members and their knowledge; using that resource as a foundation of outreach efforts; and meeting people "where they are" (NEJAC, 2013).

The *Model Guidelines* also addressed some of the common though persistent challenges and barriers to community participation. The most pressing of these that threaten to derail effective community participation are (NEJAC, 2013: 2):

- Availability of resources (specifically, availability of and access to funding and staff to conduct the activities over the long term);
- Poor or little coordination among and between various federal, state, and local government agencies and other entities;
- Identification of and coalition building among local leadership within a community;
- Lack of cultural competency among agencies trying to cultivate community engagement;
- Lack of recognition among communities and individuals of their stakeholder status in environmental justice issues; and
- Lack of trust between community members, regulatory agencies, and regulated industries.

NEJAC’s report also provides recommendations for ways that the EPA can overcome these barriers and challenges. Overall, NEJAC hopes that its blueprint and efforts to promote community participation “will serve as a guide for not only federal agencies, but for all stakeholders who are engaged in public participation efforts and who seek to meaningfully engage environmental justice stakeholders in decision-making processes” (NEJAC 2013: 1)

### C. Sustainable Development and Brownfields

National efforts to place brownfields within the broader context of sustainable development began with President Clinton’s President’s Council on Sustainable Development (PCSD). Clinton created the PCSD in 1993 through Executive Order 12852 with the directive to develop new approaches to integrate economic, environmental and equity issues. This followed in the footsteps of the World Commission on Environment and Development’s (WCED) landmark work, *Our Common Future* (1987), which defined sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987: 47).

“Meaningful community participation in land use planning and decision-making can produce development that meets the needs of a diverse group of residents, build broad support for projects, and lead to more effective public processes. Planners and community-based organizations can use interactive, customizable strategies to engage low-income, minority, tribal and overburdened residents who face barriers to participation, are not traditionally involved in public processes, or are particularly affected by development proposals.” (EPA Office of Environmental Justice and Office of Sustainable Communities, 2013: i-ii)

In its 1996 report, *Sustainable America: A New Consensus for Prosperity, Opportunity and a Healthy Environment for the Future* (1996), the PCSD identified “National Goals Toward Sustainable Development.” Among these goals were health and environment, economic prosperity, equity, stewardship, civic engagement and sustainable communities. In order to ensure that sustainable development was linked to people’s everyday lives, the PCSD placed it within the context of the needs, concerns and hopes of communities.

*“Sustainable Communities encourage people to work together to create healthy communities where natural and historic resources are preserved, jobs are available, sprawl is contained, neighborhoods are secure, education is lifelong, transportation and health care are accessible, and all citizens have opportunities to improve the qualities of their lives” (PCSD, 1996: 1)*

The PCSD’s Sustainable Communities Task Force provided a number of recommendations in order to promote sustainable communities (PCSD 1997). The first was to encourage and institutionalize “Community-Based Public Dialogue, Planning, Priority-Setting, and Implementation” which focuses on building and putting in place a community vision. Supporting and facilitating “Open and Inclusive Decision-Making” was promoted to ensure meaningful community participation. “Cleanup and Redevelopment of Brownfields Sites” was also seen as integral to building sustainable communities.

The federal commitment to sustainable communities as an important element of urban revitalization has continued. In 2009, the HUD-DOT-EPA Partnership for Sustainable Communities was formed. The Partnership was designed to provide better access for affordable housing and transportation, increasing options in each for communities while promoting equitable development and protecting the environment (HUD-DOT-EPA Partnership, 2009).

In 2010, as part of the effort to operationalize sustainable development with respect to brownfields, Brownfields Area-Wide Planning Program Grants were made available by the EPA.<sup>6</sup> The BF AWP Program is part of the HUD-DOT-EPA Partnership for Sustainable Communities and focuses on helping communities to do the research and background tasks needed to develop an area-wide plan for the assessment, cleanup and reuse of brownfields areas. The overall results of the plan are supposed to provide direction for improvements that are: protective of public health and the environment; economically viable; and reflective of the community’s vision for the area (EPA BF AWP Fact Sheet, 2012).

“The EPA created the Brownfields Area-Wide Planning (BF AWP) Program to assist communities in responding to local brownfields challenges, particularly where multiple brownfields sites are in close proximity, connected by infrastructure, and overall limit the economic, environmental, and social prosperity of their surroundings. Through the BF AWP Program, EPA provides assistance to advance community brownfields revitalization efforts.” (EPA BF AWP Fact Sheet, 2012: p. 1)

EPA’s BF AWP is intended to be complimentary to other ongoing brownfields and planning efforts. It’s designed to enable communities to make more informed decisions and advance locally-driven initiatives within brownfields efforts. In this sense, “meaningful and continuous community engagement is fundamental to the Brownfields Area-Wide Planning Program” (EPA BF AWP Fact Sheet, 2012: 2).

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<sup>6</sup> The first round of the BF AWP Program took place from 2010-2012 with 23 pilot projects. In 2013 the EPA awarded an additional 20 pilot projects.

More recently, EPA published *Creating Equitable, Healthy and Sustainable Communities: Strategies for Addressing Smart Growth, Environmental Justice and Equitable Development* (2013). The report, which was produced by EPA's Office of Environmental Justice and the Office of Sustainable Communities, takes a holistic approach to addressing the problems that persist in urban areas and provides a blueprint for achieving sustainable development within urban revitalization efforts. It focuses on the interconnection between environmental justice, smart growth and equitable development concerns as the key to making this a reality. Effective strategies must address environmental, health and economic disparities and

“This [report] aims to build on past successes and offer other low-income, minority, tribal and overburdened communities approaches to shape development that responds to their needs and values. It identifies strategies that bring together smart growth, environmental justice, and equitable development principles and that community-based organizations, local and regional decision-makers, developers, and others can use to build healthy, sustainable, and inclusive communities. These are places that provide clean air, water and land; affordable and healthy homes; safe, reliable and economical transportation options; and convenient access to jobs, parks, shopping, and other daily necessities.” (EPA Office of Environmental Justice and Office of Sustainable Communities, 2013: p. 2)

provide protections and opportunities for low-income, minority, tribal and overburdened residents to improve the quality of their lives (EPA Office of EJ and Office of SC, 2013: 6).

EPA's report discussed “Seven Common Elements” needed to build equitable, healthy and sustainable communities (EPA Office of EJ and Office of SC, 2013: 13). They are:

- Facilitate meaningful community engagement in planning and land-use decisions;
- Promote public health and a clean and safe environment;
- Strengthen existing communities;
- Provide housing choices;
- Provide transportation choices;
- Improve access to opportunities and daily necessities; and
- Preserve and build on the features that make a community distinctive.

Challenges to sustainable communities were also addressed. EPA pointed to: environmental and health concerns such as pollution, brownfields properties, unhealthy housing and inadequate nutrition; disinvestment in established communities which can be seen in spread-out development, a lack of essential goods and services in neighborhoods, and displacement due to redevelopment; and community engagement, empowerment and capacity which can be compromised due to a lack of transparency, access and trust (EPA Office of EJ and Office of SC, 2013: 7-11).





### III. Comparison of Community Participation, Environmental Justice and Sustainable Development Efforts Across Brownfields Programs

Beginning in 1995, the EPA led the way in promoting brownfields redevelopment through awarding funds for National and Regional Brownfields Pilot Projects. Although the EPA has expanded its brownfields activities, those pilot projects have continued to serve as the foundation of federal brownfields efforts by providing different models that states and localities can learn from and today serve as the basis for comprehensive

“Years ago, brownfields were seen primarily as undesirable contaminated properties that often sat idle and contributed to blight. Today, many communities recognize that while brownfields are contaminated properties, they can also be important community assets that present a tremendous opportunity for community revitalization.” (EPA’s *Brownfields Federal Program Guide 2013*, p. iii)

brownfields programs. This section analyzes brownfields program case studies and their efforts to foster community participation, environmental justice and sustainable development.

The case studies were selected based on a number of factors, including: initial receipt of EPA brownfields funding; the presence of environmental justice concerns; and a similar industrial legacy to Delaware. Attempts were also made to ensure they represented a range of regions and a variety of population sizes. After an initial screening of twenty-five possible case studies, the Center for Energy and Environmental Policy (CEEP) selected ten brownfields programs for inclusion in this report. They are: Burlington, VT; Charleston, SC; Cleveland, OH; East Palo Alto, CA; Milwaukee, WI; Pittsburgh, PA; Portland, OR; Rochester, NY; Salt Lake City, UT; and Trenton, NJ.

The criteria used in the report were selected based on the importance they play in achieving meaningful community participation, addressing environmental justice concerns and pursuing sustainable and equitable development throughout the brownfields assessment, remediation and revitalization process. Programs were analyzed based on the following criteria: *leadership and coordination; funding mechanisms; community involvement; economic aspects; environmental aspects; social aspects; and access and transparency.*

Table 4 provides the rating criteria used to evaluate each of the brownfields case studies. For each of the seven criteria, five benchmarks were established. Brownfields programs received one point each time it achieved one of these benchmarks, for a possible range of between 0 to 5 points for each category.

**Table 4: Criteria Used to Analyze Case Studies**

<b>Brownfields Rating Criteria</b>	
<b>Leadership and Coordination</b>	<ul style="list-style-type: none"> <li>• Presence of a brownfields advisory committee (1)</li> <li>• Dedicated brownfield coordinator/manager position (1)</li> <li>• Coordination between local, state and regional programs (1)</li> <li>• Evidence of diversity among the coordination group (nonprofits, academia, etc.) (1)</li> <li>• Evidence of stakeholder diversity in decision-making process (1)</li> </ul>
<b>Funding</b>	<ul style="list-style-type: none"> <li>• Brownfield program has received at least one competitive federal grant (1)</li> <li>• Brownfield program has received multiple competitive federal grants (1)</li> <li>• Brownfield program receives consistent state funding (1)</li> <li>• Brownfield program receives consistent local funding (1)</li> <li>• Local non-profit groups have received funding (1)</li> </ul>
<b>Community Involvement</b>	<ul style="list-style-type: none"> <li>• Dedicated outreach coordinator or environmental justice coordinator (1)</li> <li>• Brownfield communities have representation on advisory boards/committees (1)</li> <li>• Community members participate democratically in brownfield policy (1)</li> <li>• Dedicated funding to encourage community involvement (1)</li> <li>• Innovative methods to encourage community participation (1)</li> </ul>
<b>Economic Aspects</b>	<ul style="list-style-type: none"> <li>• Individual success stories cited as evidence of economic benefit (1)</li> <li>• Comprehensive data on economic benefits arising from redevelopment (1)</li> <li>• Program has leveraged private funds for assessment and remediation (1)</li> <li>• Evidence that benefits of redevelopment are directed toward affected community (1)</li> <li>• Marketing mechanisms employed to attract prospective purchasers (1)</li> </ul>
<b>Environmental Aspects</b>	<ul style="list-style-type: none"> <li>• Have conducted multiple Phase I and Phase II site assessments (1)</li> <li>• Have conducted coordinated, area-wide assessments (1)</li> <li>• Comprehensive data on number of brownfields assessed and remediated (1)</li> <li>• Evidence of reuse options that promote environmental stewardship (1)</li> <li>• Evidence that brownfield funds have been used for ecosystem restoration (1)</li> </ul>
<b>Social Aspects</b>	<ul style="list-style-type: none"> <li>• Evidence of reuse options that promote social benefits (1)</li> <li>• Comprehensive evaluation of social benefits arising from redevelopment (1)</li> <li>• Efforts to secure affordable or mixed income housing (1)</li> <li>• Evidence of collaboration to meet community needs (1)</li> <li>• Mandatory community benefits agreements (1)</li> </ul>
<b>Access and Transparency</b>	<ul style="list-style-type: none"> <li>• Accessible staff with information on programs and sites (1)</li> <li>• Local website with meaningful information (1)</li> <li>• Public database with easily accessible information (1)</li> <li>• Public database with comprehensive site information (1)</li> <li>• Downloadable GIS data available online (1)</li> </ul>

Community participation, environmental justice and sustainable development are guiding principles used in this report. They were supported by literature and research from the EPA Office of Brownfields and Land Revitalization, the EPA National Environmental Justice Advisory Council (NJEAC), HUD-DOT-EPA Partnership for Sustainable Communities and previous work by the Center for Energy and Environmental Policy.

NEJAC’s *Model Guidelines for Public Participation* (2013), the National Association of Local Government Environmental Professionals (NALGEP) and Northeast-Midwest Institute’s *Unlocking Brownfields: Keys to Community Revitalization* (2005), and EPA’s *Creating*

*Equitable, Healthy and Sustainable Communities: Strategies for Addressing Smart Growth, Environmental Justice and Equitable Development* (2013) proved especially important for guiding research.

Previous brownfields reports, peer-reviewed literature, and documents obtained from brownfields program websites were examined to provide background information. For each of the brownfields case studies, key personnel were then contacted and interviewed to gain an in-depth insight into the program. These interviews included: the local governmental unit administering the program, community members/representatives involved in the brownfields process and the EPA regional office with jurisdiction. Wherever available, aggregate metrics in support of the program’s achievements were cited.

Table 5 provides a summary of the ratings scale complete with assigned grades for criteria ranging from basic (a score of 1) to above average (a score of 4-5).<sup>7</sup> Table 6 then uses those grades to examine each of the ten brownfields program case studies according to the seven criteria under analysis. It allows for a comparison between brownfields programs while including noteworthy examples and providing lessons for Delaware.

The remainder of this section provides an in-depth discussion of each of the case studies. Although each individual brownfields program represents a specific response to the unique situation it confronted, CEEP hopes that an analysis of their collective experiences can prove useful in Delaware’s efforts to address brownfields issues. The lessons that can be learned from the case studies in promoting community participation, environmental justice and sustainable development are especially noteworthy.

**Table 5: Scale for Case Study Evaluation Overview**

<b>Brownfield Rating Scale</b>		
<b>Basic (1)</b>	<b>Typical (2-3)</b>	<b>Above Average (4-5)</b>
The brownfields program meets the minimum requirements in addressing the relevant criterion under review.	The brownfields program goes beyond the minimum requirements and exhibits conventional efforts in addressing the relevant criterion under review.	The brownfields program goes beyond conventional efforts and includes substantial and/or innovative approaches in addressing the relevant criterion under review.

<sup>7</sup> No programs received a score of zero for any of the seven categories.

**Table 6: Comparison of Brownfields Programs**

Case Study	Criteria							
	Leadership & Coordination	Funding	Community Involvement	Economic Aspects	Environmental Aspects	Social Aspects	Access & Transparency	Lessons for Delaware
<b>Burlington, VT</b>	<b>Above Average</b>	<b>Above Average</b>	<b>Above Average</b> Surveys to initiate reuse dialogue Commitment of actors to affordable housing	<b>Basic</b>	<b>Typical</b> Integration of numerous environmental concerns	<b>Above Average</b> Coordinated efforts for affordable housing Creation of green spaces for community benefit	<b>Above Average</b>	Value of strong continuous leadership and directive Redevelopment uses focused on social aspects of re-use Innovative means to enhance community involvement
<b>Charleston, SC</b>	<b>Above Average</b>	<b>Typical</b>	<b>Above Average</b> Extensive planning forums and charettes Use of prior existing strong relationships	<b>Basic</b>	<b>Basic</b>	<b>Typical</b> Health monitoring of brownfields residents Local job training and job opportunities	<b>Above Average</b>	Inclusiveness of community involvement Brownfields developed as educational resources Providing Initial funding for community engagement
<b>Cleveland, OH</b>	<b>Above Average</b>	<b>Above Average</b>	<b>Basic</b>	<b>Typical</b> 291 million in private funds leveraged	<b>Typical</b> Brownfields/stormwater coordinated efforts	<b>Typical</b> Funding prioritizes lower income urban areas	<b>Typical</b>	Value of coordinated efforts to leverage funding Integration of sewer and stormwater concerns Property tax revenue
<b>East Palo Alto, CA</b>	<b>Above Average</b>	<b>Above Average</b>	<b>Above Average</b> Pro-active community-based area-wide plans Use multiple platforms to engage community	<b>Above Average</b> Creation of various site-specific metrics Local job creation tracked	<b>Above Average</b> Inclusive, area-wide assessment approach Redevelopment for ecosystem preservation	<b>Above Average</b> Efforts to ensure local hiring for jobs created Creation of community centers	<b>Basic</b>	Importance of area-wide assessments. Sustainable development focus of re-use options Empowering community to “own” redevelopment
<b>Milwaukee, WI</b>	<b>Typical</b>	<b>Above Average</b>	<b>Above Average</b> Staff dedicated to meaningful input Focus on community-driven redevelopment	<b>Above Average</b> 766 million in private investment leveraged Large number of jobs created or retained	<b>Above Average</b> Riverbank restoration prioritized/addressed Significant areas assessed and remediated	<b>Above Average</b> Training in health monitoring provided Site reuse for urban agriculture	<b>Above Average</b>	Integration of stormwater and ecosystem restoration Experienced staff to build community partnerships Value of easily navigable and comprehensive database

**Table 6: Comparison of Brownfields Programs (cont.)**

Case Study	Criteria							
	Leadership & Coordination	Funding	Community Involvement	Economic Aspects	Environmental Aspects	Social Aspects	Access & Transparency	Lessons for Delaware
<b>Pittsburgh, PA</b>	<b>Typical</b>	<b>Typical</b>	<b>Typical</b> Broad spectrum of community partners	<b>Above Average</b> Tracking of multiple economic parameters Property tax creation and documentation	<b>Basic</b>	<b>Typical</b> Creation of abundant park space on brownfields	<b>Typical</b>	Tightly tracked and available economic metrics Integration of greenspace in redevelopment options Multiple layers of community engagement
<b>Portland, OR</b>	<b>Above Average</b>	<b>Above Average</b>	<b>Above Average</b> Dedicated funding to promote engagement EJ Coordinator for community input	<b>Basic</b>	<b>Basic</b>	<b>Typical</b> Funds based on meeting community needs	<b>Above Average</b>	Value of dedicated funds to promote engagement Access to info facilitates community participation Success of pro-active community engagement
<b>Rochester, NY</b>	<b>Above Average</b>	<b>Above Average</b>	<b>Typical</b> Funding to encourage community efforts	<b>Above Average</b> Tracking of multiple economic parameters 438 million in private funds leveraged	<b>Typical</b> Attempts at large-scale ecological restoration	<b>Typical</b> Efforts to reduce gentrification	<b>Above Average</b>	Innovative means to promote community involvement Integration of greenspace in redevelopment options The need to address gentrification issues
<b>Salt Lake City, UT</b>	<b>Typical</b>	<b>Typical</b>	<b>Typical</b> Dedicated funding to promote engagement	<b>Above Average</b> Tracking of multiple economic parameters 380 million in private funds leveraged	<b>Basic</b>	<b>Typical</b> Creation of public transit oriented redevelopment	<b>Typical</b>	Tightly tracked and available economic metrics Effective funding mechanisms Integration of greenspace and public transit reuse options
<b>Trenton, NJ</b>	<b>Above Average</b>	<b>Above Average</b>	<b>Above Average</b> Two-way process for community input Dedicated funding to promote engagement	<b>Basic</b>	<b>Typical</b> Significant assessment and remediation	<b>Typical</b> Site reuse to meet community/social needs	<b>Typical</b>	Value of a set Brownfields Program Coordinator Education efforts to empower community residents Balanced reuse options for sustainable development

## A. Burlington, VT

Burlington, VT is often cited as a successful example of community involvement and coordination in brownfields remediation and redevelopment. The City, with a population of approximately 42,600, has received over \$ 1 million dollars from the EPA for brownfields related activities. In addition, Burlington has twice been named an EPA Brownfields Showcase Community finalist and five of its brownfields projects have been recognized as “EPA Region One Brownfields Success Stories.”

### **Background**

Timber dominated the early economy of Burlington. Industry within the city was largely comprised of lumber mills, lumber treatment, wood working, boatbuilding and machining. As Burlington’s industry evolved, so too did the shoreline of Lake Champlain. Over 60 acres of land was created with fill material along the shoreline to facilitate a lumber port, rail yard and eventually a petroleum storage facility. By the 1950s, heavier industry moved into the area created by the fill and began disposing metal tailings, petroleum products, solvents and other compounds on site (Burlington CEDO, 2012a).

As of the 2010 Census, 3.9% of the City’s residents were African American and 2.7% were Hispanic. These numbers are significantly higher than those for state of Vermont as a whole.<sup>8</sup> Notably, 25% of city residents live below the poverty line, compared to an 11% average for the state of Vermont. While median household income was approximately \$12,000 less for Burlington households compared to the Vermont median, the median housing unit value was \$45,000 more than Vermont’s median housing unit value. These findings accord with the City’s commitment to affordable housing as a major priority and community surveys that cite it as a significant community problem (City of Burlington, 2008).

### **Leadership and Coordination**

Much of the success of Burlington’s brownfield redevelopment efforts can be traced to strong leadership and coordination between different entities. Overall brownfields efforts in Burlington have sought to increase affordable housing, increase the tax base, reduce environmental hazards and allow for the productive re-use of historic structures. The following groups have also proved essential in promoting a holistic view of brownfields remediation and redevelopment:

- Burlington Community and Economic Development Office (CEDO);
- Vermont Department of Environmental Conservation (DEC);
- Chittenden County Regional Planning Commission (CCRPC); and

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<sup>8</sup> According to the 2010 Census African Americans comprise 1% and Hispanics 1.5% of Vermont state residents.

- Champlain Housing Trust (CHT).

CEDO has been primarily responsible for the overall coordination of brownfields redevelopment activities since 1996. The position of the Special Project Manager within CEDO has been identified by both EPA and city staff as an essential part of Burlington's success (Warner, 2013). The Special Project Manager has been working on brownfields issues from the start and provides historical continuity to those efforts. This has helped CEDO to emphasize the importance of successful redevelopment to the City, to identify potential sites that can best utilize/leverage multiple resources for projects through coordination with regional entities, state and federal governments as well as working one-on-one with developers and community members. While CEDO coordinates redevelopment activities, Vermont's DEC administers and oversees the brownfields cleanup process.

The CCRPC and the CHT have also been central in promoting affordable housing as a central element of Burlington's brownfields efforts. The CCRPC has used its economic development policy to target brownfields properties for productive re-use and provide funding via assessment and investigation grants (CCRPC, 2011). The CHT has been a prominent community voice in brownfield redevelopment via empowering the community in acquiring properties that otherwise blight the community and developing site design guidelines in consultation with the community.

### **Funding and Incentive Mechanisms**

Burlington, under the leadership of CEDO, has been successful in leveraging funds for brownfields assessment, remediation and redevelopment. From 1997-2004 the City leveraged \$27.4 million in redevelopment funds for 48 projects. Preliminary numbers from 2009-2012 indicate the city leveraged approximately \$10 million in redevelopment funds on 13 projects (Warner, 2013). The City has been particularly effective in its efforts to bundle funding opportunities among different entities for specific projects.

- At the federal level, 7 EPA assessment grants have been utilized;
- At the state level, Burlington has used Community Development Block Grant (CDBG),<sup>9</sup> the Environmental Liability Limitation Program(ELLP),<sup>10</sup> the Brownfield Revitalization Fund (BRF),<sup>11</sup> and the Technical Assistance Program (TAP),<sup>12</sup> and

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<sup>9</sup> The Vermont CDBG has a portion set aside specifically for brownfields redevelopment.

<sup>10</sup> The ELLP provides limited liability related to cleanup activities to give development interests peace of mind and serves as a precondition for participation in both the BRF and TAP.

<sup>11</sup> The BRF is administered by the state Agency of Commerce and Community Development in consultation with the Vermont DEC. It provides funds for both assessment and cleanup.

<sup>12</sup> The TAP is administered by Vermont DEC. It provides financial and technical assistance awards to projects on the basis of a number of criteria, including: the overall redevelopment plan, ecological enhancements, smart

- At the local level, prospective developers may work with CEDO to utilize brownfield zoning waivers, historic preservation tax credits, and the City’s lead abatement program.

## **Community Involvement**

Initial planning forums identified community participation in brownfields redevelopment as a priority. Since then CEDO has made a commitment to meaningful community involvement by using traditional planning processes and more innovative outreach methods to invite citizen participation. Indeed, CEDO has been commended by community representatives for involving the community in the brownfield redevelopment process on city-owned properties (Demetrowitz, 2013).

As previously noted, residents have influenced brownfields redevelopment via the Champlain Housing Trust (CHT). In addition, community members get a direct voice in the development goals of their neighborhoods through Neighborhood Planning Assemblies (NPAs). NPAs, which meet monthly, are located in each ward of the city. NPAs improve communication between community members and the City by providing a democratic and organized forum for citizens to make their opinions heard on development projects within respective wards.

The CEDO has implemented five outreach steps to inform the public and engage City residents in the redevelopment process (Warner, 2013):

- General Project Publicity—Targets residents through forums, internet announcements, signage placed on properties and press releases.
- Development Review—Looks to conduct a detailed critique of projects in the regulatory review process via public hearings comment periods and developer access.
- City and Private Outreach Systems—Provides specifics related to each project in multiple accessible media for easy city-wide access.<sup>13</sup>
- Neighborhood Engagement—Uses the information obtained in NPAs and special event forums to define community concerns and engage developers in project changes.
- Public Meetings and Site Walkovers—Provides the public, especially affected residents, the opportunity to “walk” each site and evaluate proposals in public meetings.

An innovative example of how CEDO invites public input is the Moran Power Plant Redevelopment Project. After progress on initial project proposals failed (due to funding feasibility limitations), CEDO sought more robust public participation. “Idea Cards” were

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growth, environmental and health benefits, leveraged funding, and statewide community and economic development goals.

<sup>13</sup> Accessible media includes social media, YouTube, and “Front Porch Forum,” an online community service for Burlington residents and neighborhoods.



mailed to every household in the city and 30 different idea categories were picked by the review committee. Citizens were then asked to rank these ideas based on their preferences. The results were used to generate a Waterfront Advisory Survey to which more than 10000 people responded with more specific ideas on site reuse. In September of 2006 an Open House Review was held to allow for feedback on the top 7 concepts identified culminating a two year public consultation process (De Sousa, 2012).

### **Economic Aspects**

Limited economic metrics are available with regards to Burlington's Brownfields Program in order to determine program success. Information with regards to any increase in property taxes, sales tax revenue, and job creation as a result of remediation and redevelopment are sporadic at best. For example, from 2009 -2012, brownfields activities on 13 projects created or retained 39 jobs (Warner, 2013). This is attributed to the focus on affordable housing units and public spaces which brownfields program staff state is more difficult with respect to generating and tracking tangible economic impacts.

### **Environmental Aspects**

From 1997-2012, Burlington was successful in leveraging funding in order to conduct assessment on 61 brownfields sites. In addition, remediation and redevelopment activities have taken place on 48 of these sites. While the Vermont DEC lists over 300 hazardous and brownfields sites in Burlington, it is significant to note that approximately 2/3 of these have either received a COC (Certificate of Completion) or are now considered "inactive" sites.<sup>14</sup>

Burlington is also exemplary in that it has sought to address its land/water nexus. In recognition of the City's industrial history and its proximity to Lake Champlain considerable efforts have been made to preserve water resources. Green stormwater management techniques in brownfields projects have helped mitigate deterioration in the water quality. These techniques aim to address the migration of legacy pollutants into the lake, as well as address stormwater runoff associated with the steep grades associated with properties around the lake that contribute to non-point source pollution (Warner 2013).

Redevelopment projects within the City have also sought also to meet sustainable redevelopment principles with respect to their design and future use of resources (Warner, 2013). The use of existing infrastructure and recycled construction material/demolition waste, along with ensuring that new and renovated buildings exceed state and local energy codes and manage water efficiently, demonstrate the extent of the City's commitment to sustainable development.

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<sup>14</sup> Inactive sites are those that have either obtained a COC or have been deemed "Site Management Activities are Complete" (SMAC), "No Further Remedial Action" (NFRA) or "No Further Action Planned" (NAP).

## **Social Aspects**

Burlington's Brownfields Program focuses on the social aspects of brownfields redevelopment. Early on the City identified improving the quality of life of its residents as an important goal of its brownfields efforts. Given the low rate of rental vacancies and high levels of poverty, both community members and City personnel recognized that providing affordable housing was central to sustainable community development. As a result, brownfields projects have targeted affordable housing as a goal. For example, from 1997-2004, 114 new housing units were created on former brownfields properties. In addition, the City has sought to address the possibility of gentrification issues. Inclusionary zoning within the City requires that housing developments of five or more units include 15-25% perpetually affordable units (Warner, 2013).

Burlington's dedication to creating livable communities for its residents is also seen in numerous projects that promote mixed use development and commitment spaces. From 1997-2004, the City created 42 acres of green space/pocket parks. In addition, redevelopment efforts have sought to ensure equitable access to public transportation and retain and renovate historic properties to preserve cultural aspects.

## **Access and Transparency**

The CEDO provides information on the brownfields process and brownfields activities within the City. Information on the general history and causes of contamination within Burlington, the assessment process, and the role of the city, the state and the federal government with regards to assessment, remediation and redevelopment are all accessible on the City's website.<sup>15</sup> The website also provides brownfields program contact information and an easy link to the State of Vermont's brownfield information portal. Users interested in finding detailed brownfield property information can access the Department of Environmental Control's interactive database which is available to the public.<sup>16</sup>

The DEC's website is simple to navigate and is searchable by site number, city/town, site name, or address. Individual site information includes: site name, address, case manager, priority, status, source of contaminants and actual contamination (if available), contaminants of concern, map of location and links to related documents (such phase II assessments and land use restrictions recorded in land records, easements etc.). The database includes all sites, including those recently discovered as well as those undergoing follow up monitoring.

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<sup>15</sup> The City's website can be accessed at <http://www.burlingtonvt.gov/CEDO/Brownfields/> brownfields and hazardous sites can be done on the Vermont DEC Waste Management Interactive Database: <http://www.anr.state.vt.us/WMID/>

<sup>16</sup> The Vermont DEC Waste Management Interactive Database on brownfields can be accessed at : <http://www.anr.state.vt.us/WMID/>

## **Lessons for Delaware**

- The role of strong program leadership and historical continuity in the brownfields redevelopment process;
- The need for dedicated and innovative community outreach efforts to guarantee meaningful community participation;
- The need to highlight social aspects of brownfields redevelopment in order to build sustainable community development; and
- The importance of innovative policies that examine and address the land/water nexus that exists on brownfields properties.

## **B. Charleston, SC**

The City of Charleston, SC established its brownfield program in 1998 largely as a tool to revitalize its economically distressed communities. This was in keeping with previous efforts working in conjunction with the United States Department of Housing and Urban Development (HUD). Charleston was awarded both Enterprise Community (EC) status and Renewal Community (RC) by HUD. The City has also been the recipient of \$1.2 million in grants for assessments and revolving loan capitalization from the EPA.

### **Background**

Charleston has historically been, and still remains, an important port location, with the 4<sup>th</sup> largest port on the East Coast. It is located in coastal South Carolina at the confluences of the Ashley and Cooper rivers. Industrial development associated with its port has included saw mills, creosoting plants, fuel depots, coal and coke operations, and chemical operations. The area directly north of the Downtown Charleston Peninsula (known as the “Neck”) has been associated with phosphate mining and fertilizer facilities with the banks of the Ashley and Cooper rivers holding vast amounts of raw phosphate resources. During the 1880s, South Carolina was responsible for half of the world’s phosphate production but the boom ended for Charleston by the 1930s (Schuler & Bailey, 2004). By the mid-1900s Charleston had become an area of industrial growth. Unfortunately, industrial growth has stagnated and largely disappeared over the latter half of the 20<sup>th</sup> century, leaving blighted vacant properties throughout the “Neck” area.

With a population of 122,689, Charleston is the second largest city in South Carolina. According to the 2010 census, minorities compose approximately 32% of the city’s population, with African-American as the largest minority group at 25%. Median household income is \$31,287 with 18% of persons living below the poverty level. Much of Charleston’s brownfields efforts have focused on the City’s (RC), formerly designated an EC.<sup>17</sup> Charleston’s RC is a 7.3 square mile composed of 19 neighborhoods including much of the area known as “The Neck.” In 2000 the population of the RC was approximately 20,000 with 20,250 with 72% African- American makeup and with 60% of the families with children under 18 living in poverty (City of Charleston, 2009).

### **Leadership and Coordination**

One of the main strengths of Charleston has been the comprehensive nature of coordination with respect to its brownfields efforts. Charleston’s Department of Housing and Community

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<sup>17</sup>HUD and the USDA designated Charleston as an EC in 1994 and as an RC in 2000. The goal of the EC/RC program was to attract public-private partnerships to facilitate investment for sustainable community and economic redevelopment. The City’s RC designation lasted until 2009.

Development (CDHCD) has overseen brownfields efforts within the City in keeping with the original goal of the brownfields pilot project to “help create sustainable, healthy and well-balanced neighborhoods that promote economic growth and opportunity without compromising the quality of life for residents in the area” (HUD, 1998). In addition, many other groups/agencies have assisted in brownfields efforts. These include:

- The Medical University of South Carolina (MUSC);
- Concurrent Technologies Corporation;
- South Carolina’s Department of Health and Environmental Control (SCDHEC);
- The Greater Charleston Empowerment Corporation; and
- The National Park Service.

Early on in the brownfields process, the CDHCD received assistance from the MUSC and Concurrent Technologies Corporation. It then formed the Brownfields Taskforce, composed of those groups plus neighborhood residents, representatives from the City of Charleston, the Regional Development Alliance, and the Charleston Metro Chamber of Commerce. The Task Force worked collectively to identify properties within the EC/RC and share resource information. A non-profit, the Greater Charleston Empowerment Corporation (GCEC) also played an important role in brownfields efforts. The GCEC, composed of community leaders and residents from the designated EC/RC, was in charge of administering the EC/RC. It partnered with the Brownfields Task Force to promote revitalization of “The Neck” through brownfield cleanup and redevelopment efforts.

The City of Charleston also coordinated with the National Park Service, the EPA, and the SCDHEC to negotiate a specific plan for the assessment, cleanup and redevelopment of an 18 acre waterfront site in historic downtown Charleston. Coordinated efforts by these groups were integral in accelerating successful redevelopment of the area (NALGEP & NWI, 2005).

### **Funding Mechanisms**

Funding mechanisms for Charleston’s brownfields program have largely stemmed from state and federal programs. The following funding mechanisms have been utilized in Charleston’s brownfields program:

- At the federal level, Charleston has received over \$1,000,000 dollars from the EPA. Grants have been awarded to assist with site-specific assessments and cleanups as well as to capitalize a cleanup revolving loan fund;
- The City also worked with Concurrent Technologies to receive EPA jobs training grants associated with brownfields cleanup; and

- At the state level, Charleston has available the Brownfields Cleanup Revolving Loan Fund,<sup>18</sup> the state Voluntary Cleanup Program (VCP),<sup>19</sup> a state Voluntary Activity Tax Credit,<sup>20</sup> and an additional jobs tax credit.<sup>21</sup>

## **Community Involvement**

Charleston's brownfields efforts have proceeded concurrently with and benefitted from the City's Renewal Community designation. This is particularly the case with respect to community participation. Traditionally, the City has reached out to both community groups representing local neighborhoods and community residents in order facilitate both the brownfields and the RC process. Overall, due to this coordination, the City feels it has received strong support from RC residents on redevelopment efforts. (City of Charleston, 2009). Community representatives agree that community participation is a staple of the planning process and has been empowering to members of the community. They also claim the following have been significant factors in enhancing community participation efforts (Moore Sr., 2013):

- The GCEC which represents over 50 neighborhoods located within the RC received initial funding from the City in order to coordinate community efforts;
- The presence of the GCEC on a long-term basis and working with local neighborhood organizations has greatly improved community outreach efforts;
- Meetings that take place within the RC and are held at convenient times for community residents has maximized attendance and with it community input; and
- The City has made efforts to ensure that community members are well-informed on the technical aspects of planning via information sources.

The Berkley-Charleston-Dorchester Council of Governments has followed in those footsteps in sponsoring the development of a new Master Plan for the former RC area known as "The Neck." Currently in development, the new master plan is headed by the Charleston Neck Partnership for Prosperity which comprises numerous interests including community organizations and residents from both Charleston and North Charleston. Development of the plan included open houses, design charrettes, and update meetings all held from 2011-2012. The goal is to create a bottom-up community developed master plan to guide decisions on the area's future growth and development.<sup>22</sup>

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<sup>18</sup> The South Carolina Brownfield Cleanup Revolving Fund is administered by the Catawba Council of Governments with loans available to local government, businesses, nonprofits, or any public/private party.

<sup>19</sup> The State's Voluntary Cleanup Program is administered by the SCDHEC and is geared towards liability protection.

<sup>20</sup> The Voluntary Activity Tax Credit will credit up to 50% of qualifying cleanup costs against the business's state income tax.

<sup>21</sup> The state provides an additional jobs tax credit for sites that receive a Certificate of Completion, qualifying sites are allowed an additional \$1000 exemption per job created (South Carolina DHEC, 2012).

<sup>22</sup> The draft master plan is available at: <http://www.myplanspace.com/neckprosperity/index.cfm>

## **Economic Aspects**

Overall, little effort has been made to track aggregate economic accomplishments of Charleston's brownfields redevelopment efforts. Numbers/metrics that do exist are site-specific and largely focus on the benefits accrued from the South Carolina Aquarium. The creation of the Aquarium has been praised for its value as an important community asset as well as its economic benefits. Within the first seven months of its opening, the Aquarium brought in \$8.8 million dollars of revenue from over 1.3 million visitors while employing a staff of over 100. Supporters also claim that the Aquarium has helped spur additional brownfields private projects which have led to investment and created other jobs and revenues at neighboring properties along the waterfront (NALGEP & NWI, 2005).

Brownfields redevelopment efforts with respect to economic aspects in the downtown section of Charleston which comprises the EC have not been documented. This may be largely attributed to stalled private redevelopment efforts resulting from the downturn in the national economy. While much of the remediation and cleanup of properties along "The Neck" have been completed, efforts to redevelop and revitalize the area faced difficulty when major investors defaulted on county taxes.<sup>23</sup> Therefore, the economic impacts of such efforts have yet to be seen. While the community has been appreciative of redevelopment efforts, it has suggested that the city could do more to promote local employment (Moore Sr., 2013).

## **Environmental Aspects**

The original goal of the first Brownfields Pilot Project in Charleston was to identify and inventory brownfields within the designated EC/RC area. The project was successful in this regard by identifying over 30 brownfield locations. Moreover, since 1999 over 60 brownfield sites within the City have been identified and inventoried (City of Charleston, 2009). Remediation and cleanup efforts financed through Charleston's Brownfields Revolving Loan Fund were conducted on two sites comprising 134 acres (HUD, 2002).

According to the City, many more brownfields sites have been assessed by private parties. The City also points out that over 800 acres of brownfields properties have been remediated and are in the process of redevelopment (City of Charleston, 2009). Exact numbers in regards to number of sites or acres remediated privately or by the city are not available. In addition, no efforts were found to integrate brownfields remediation and redevelopment efforts within a large context of environmental policy.

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<sup>23</sup> Delinquent taxes forced the auction of 200 acres of properties owned and scheduled to be redeveloped by a private equity firm (Cherokee Investment Partners) in December 2011.

## **Social Aspects**

Charleston sought to address community concerns such as employment opportunities for community residents and health and housing concerns through its brownfields efforts. The City has been used grant money to specifically address each of these community issues. As noted, the community has been primarily concerned with job opportunities and identified a lack of education and training in residents to take up new jobs as a persistent problem. The City has attempted to address this by providing job training to residents, especially youth, on brownfields remediation in partnership with environmental consulting agencies (Moore Sr., 2013). For example, in conjunction with the Concurrent Technologies Corporation, the City used an EPA Jobs Training grant to provide RC community residents with environmental technician training.<sup>24</sup> The program saw 27 out of 29 students graduate and many graduates found employment with local and national environmental consulting firms engaged in remediation activities (HUD, 2002).

The City has also used EPA and HUD grants to ensure that health monitoring of community residents (in partnership with the Medical University of South Carolina) and mixed-use housing are provided for in the brownfields areas. Finally, the South Carolina Aquarium's success has meant a thriving environmental and educational resource for the city. The aquarium's educational program allows elementary and secondary school students to attend the exhibits for free, as long as they participate in programmed lessons before and after the visit (EPA & NALGEP, 2005).

## **Access and Transparency**

The South Carolina Department of Health and Environmental Control (SCDHEC) maintains a publicly available database of brownfield properties, assessment status, and cleanup activities.<sup>25</sup> The database also includes registered underground storage tanks and properties with conditional environmental remedies. The information provided includes impacted environmental media, and nature of contamination, contaminants of concern, plus the address and or geographic location of each site. The SCDHEC database could be improved by providing a searchable database (by location or contaminants for example) instead of providing just the PDF of the entire record.

More importantly, Charleston needs to improve its access and transparency with respect to brownfields. Currently, the City has not used technology to help disseminate information with regards to brownfields. No website exists to provide overall basic information on brownfields

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<sup>24</sup> The goals of the program were to provide long-term meaningful employment opportunities for community residents while facilitating the cleanup of contaminated sites.

<sup>25</sup> The database/ public record report is located at <http://www.scdhec.gov/environment/lwm/databases.htm>.



properties (lists, maps or even a link to the SCDHEC database would be helpful) or the City's ongoing brownfields activities. These are major omissions, as other communities have shown that easily accessible and navigable websites with information can help community residents participate in the brownfields process.

### **Lessons for Delaware**

- ❑ The value of comprehensive efforts among different groups and agencies to coordinate and accelerate brownfields efforts;
- ❑ The significant role a community-funded and designated partner for outreach can play in enriching overall community involvement;
- ❑ How redevelopment plans can take into account social goals of the impacted communities such as job training opportunities and education activities; and
- ❑ How the location and timing of meetings can maximize attendance and amplify community input.

## C. Cleveland, OH

The City of Cleveland, OH is located within Cuyahoga County in northeast Ohio. City, county, and state agencies have coordinated their efforts to receive more than \$7.5 million in EPA brownfield related grants for assessment, cleanup, jobs training and revolving loan funds for Cleveland. These efforts were integral in securing some of the earliest brownfields grants in 1993 and continue to today.

### **Background**

According to the 2012 Census, Cuyahoga County is home to approximately 1.3 million residents, and is the largest population center in Ohio. Cleveland and its 397,000 residents serve as the economic base for the County. These areas exemplify the experience of many manufacturing areas that saw industrial and population losses from the beginning in the 1970s and which continue today. For example, the County's population base peaked in the 1970s with over 1.7 million residents. The economic base in Cleveland was originally focused on heavy manufacturing including automobile production, steel mills, and chemical manufacturers. From 2000-2006, the county lost over 45,000 manufacturing jobs many of them in Cleveland. Due to previous pollution and more recent industrial migration it has been estimated that 10,000-25,000 brownfields are within the City limits.

Cleveland illustrates the concerns of environmental justice within brownfields. It has an African-American population of 53% and a Hispanic population of 9% (the numbers for Ohio as whole are 12.3% and 3% respectively). Moreover, 28% of City residents are below the poverty level with over 18% unemployed both of which are double the state levels. Of the 4,600 acres of brownfields estimated in Cuyahoga County, the vast majority occur within Cleveland's urban core, surrounded primarily by low income and minority communities.

### **Leadership and Coordination**

Brownfield redevelopment in Cleveland is supported by the Cleveland Department of Economic Development's (CDED) Brownfield Redevelopment Program. The Brownfield Program is composed of an Industrial-Commercial Land Bank, a Technical Assistance Program and an Assessment Program. The CDED utilizes the Brownfield Program as part of the city's overall economic development strategy to ensure readily available and affordable land is available to new and existing businesses (CDED, 2013).

Additional agencies that have played prominent roles include:

- Various federal agencies;

- Cuyahoga County Department of Development (CDD);
- Cuyahoga County Planning Commission (CPC); and
- The Northcoast Brownfields Coalition

The primary role of CDED has been to leverage funding for brownfield assessment and technical assistance. This is accomplished through partnerships developed with the above mentioned agencies and selected environmental consulting firms. The establishment of the Industrial-Commercial Land Bank in 2005 has been significant in this respect. It allows the City to take the lead to acquire tax delinquent properties, assemble properties under a single umbrella and aggregate properties into a more business-friendly parcel arrangement geared towards the overall goal of redevelopment (City of Cleveland and Cuyahoga County, 2009).

The CDD and CPC represent Cuyahoga County to coordinate development and planning with the City to identify and redevelop brownfields. The CDD is the lead agency in the Northcoast Brownfield Coalition, developed in coordination with the CDED and others to facilitate the brownfields process.<sup>26</sup> The goal of the Coalition is to effectively coordinate and synergize resources for brownfield redevelopment in order to better leverage and attract redevelopment funding (Bayne, 2013).

The federal Partnership for Sustainable Communities interagency effort (HUD, DOT, EPA) has also worked extensively with the City in its brownfields efforts to develop transportation infrastructure, cleanup and redevelop brownfields, and attract new jobs to Cleveland's Euclid Corridor. The goal of the partnership is to "coordinate federal housing, transportation, water and other infrastructure investments to make neighborhoods more prosperous, allow people to live closer to jobs, save households time and money, and reduce pollution" (Partnership for Sustainable Communities, 2012).

## **Funding**

The City of Cleveland, Cuyahoga County, and the state of Ohio, Cuyahoga have provided numerous avenues of brownfields funding.

- At the federal level, the City and County have leveraged over \$3 million in EPA brownfields pilot, cleanup and assessment grants and over \$4.5 million in multiple EPA grants to capitalize the County's Brownfields Cleanup Revolving Loan Fund;

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<sup>26</sup> Other partners include the Cleveland-Cuyahoga County Port Authority, the Northeast Ohio First Suburbs Development Corporation, the Cuyahoga County Board of Health and Northeast Ohio Regional Sewer District.

- The state of Ohio provides funding through Targeted Brownfield Assessment Grants, Brownfields Expensing Tax Incentive, the Clean Ohio Assistance Fund (COAF)<sup>27</sup> and the Community Development Finance Fund;
- The county provides BCLRF grants and additional funding opportunities include the Brownfields Community Assessment Initiative (CAI)<sup>28</sup>, and the Commercial Property Reutilization Fund (CPRF);<sup>29</sup> and
- At the city level, the Brownfield Assessment Program provides funds and services to eligible parties for assessments, evaluations and navigation of the State’s Voluntary Action Program while the City’s Vacant Property Initiative Fund provides loans for site acquisition, environmental assessments, clearance and construction.

## **Community Involvement**

Cleveland’s efforts to promote community participation have changed over time. Early efforts which prioritized community participation resulted in the creation of The Cuyahoga County Brownfields Working Group/Communities Strategy Team, established through EPA Brownfields Pilot Grants in both the County and the City. The working group attempted to rely on input and assistance from a wide range of groups—it was composed of 42 committee members that included city, county, state, developer, lender and neighborhood representatives. The working group was particularly concerned with the views/concerns of those within the “immediate neighborhood” (CCPC, 1995). The group:

- Helped develop a publicly accessible website/GIS database for stakeholders interested in brownfields;
- Held community outreach meetings to inform members about projects and gain input;
- Identified barriers to community involvement;<sup>30</sup> and
- Partnered with Cuyahoga Community College (Tri-C) to increase opportunities for community involvement and overcome these obstacles.

In 1999 the Brownfields Working Group dissolved after it had achieved its primary objectives. Since then, two primary mechanisms have existed for community involvement in the brownfield redevelopment process. Community Development Corporations (CDC) are utilized to engage local citizens to develop and reach community-wide goals for economic and social development (Auker, 2013). There are currently over 30 CDCs within Cleveland and they are organized

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<sup>27</sup> The Clean Ohio Revitalization Fund is part of the COAF and makes grants available for site assessment and remediation.

<sup>28</sup> The CAI provides assessments grants to public entities, non-profits, business/developers. Separate grants applications are made available for green space reuse and commercial/industrial reuse options.

<sup>29</sup> The CPRF is a Loan program for the redevelopment of commercial properties.

<sup>30</sup> The Brownfields Working Group identified community indifference, the private nature of redevelopment projects and inadequate participatory mechanisms as the main obstacles to community participation.

within the Cleveland Neighborhood Development Corporation. In addition, all Cuyahoga County administered brownfield programs within the City require formal support in the form of a council resolution. This requires a letter of support from the city council member that represents the ward the project is located in (Auker, 2013). This assumes city council members are accurately representing the interests of ward residents.

### **Economic Aspects**

Economic metrics with respect to the economic benefits generated via brownfields redevelopment do not exist at the City level for Cleveland. This is largely due to the numerous agencies, types of programs, and close coordination involved in the city's brownfields redevelopment efforts. Cuyahoga County has sought to gauge the economic benefits/returns of brownfields efforts. Since Cleveland represents the economic base of the County and its brownfields redevelopment activities, analysis of its metrics are valuable.

Cuyahoga County reports a combined return on investment of over \$60 million from \$33 million invested by its Commercial Redevelopment Fund (formerly known as Brownfield Redevelopment Fund) (CDD, 2012). The return on investment is measured through loan repayments, sales tax revenues, property tax revenues and income taxes. The County's Brownfield Revolving Loan Program has also leveraged \$291 million in additional private funding for brownfields assessment, cleanup and redevelopment activities (CDD, 2012). Metrics also show that from 2000 to 2009 the county's brownfield revolving loan fund created and/or retained 2,000 jobs and increased property tax valuation by \$16 million (City of Cleveland and Cuyahoga County, 2009).

### **Environmental Aspects**

There are approximately 4,600 acres of brownfields in Cuyahoga County of which many are within Cleveland. Assessment and remediation activity have focused on large sites in order to maximize both cleanup and redevelopment efforts. According to the City of Cleveland and Cuyahoga County 2009 report, over 72 site assessments covering approximately 1790 acres had taken place by that time. This led to a reported 37 environmental cleanups resulting in 297 remediated acres (City of Cleveland and Cuyahoga County, 2009). Assessment and cleanup efforts still have a ways to go to address the brownfields properties within the City.

Brownfields efforts have sought to integrate other environmental goals as well. A Consent Decree has been initiated between the federal EPA, the state of Ohio and the Northeast Ohio Regional Sewer District (NORSO) to reduce combined sewer overflow (CSO) discharges into Lake Erie. NORSO developed a green infrastructure plan (Project Clean Lake Green Infrastructure Plan) to reduce stormwater flows from brownfields areas into CSOs. The plan

also included a Vacant Land Use Steering Committee composed of planners, elected officials, CDCs, nonprofit leaders, Kent State University and others to identify vacant land reuse option that would reduce stormwater flows into CSO's (NORSD, 2012).

## **Social Aspects**

Brownfields redevelopment efforts in both the City of Cleveland and Cuyahoga County have focused largely on commercial and industrial reuse. The County and City recognize that the brownfield problem largely affects residents living in poverty within the city's urban core.<sup>31</sup> Therefore, the social aspects of brownfields redevelopment have focused on creating and ensuring job opportunities for residents and securing a tax base that funds public schools and infrastructure for residents living in the affected areas. Cleveland's Vacant Property Initiative Fund also includes requirements to ensure prevailing wages are paid and that City and low income residents are hired in order to receive funds. Unfortunately, metrics do not exist to determine the amount of jobs that have gone to community residents or to target property or sales tax revenue for brownfields and their impacted areas.

Other efforts to focus on the social aspects brownfield cleanup and redevelopment include: involvement with the Partnership for Sustainable Communities; the utilization of several parks and playgrounds as reuse projects under the Non-Profit/Green Reuse Community Assessment Initiative; development of health monitoring systems and a brownfield contaminant tracking database in conjunction with the Health Department; and more recent efforts to support community agriculture through brownfield redevelopment.

## **Access and Transparency**

Cleveland's Department of Economic Development (CDED) and Cuyahoga's Department of Development (CDD) maintain websites documenting their respective brownfield efforts. Both websites provide links to developer-oriented redevelopment resources, provide a central point of contact, and provide general information of their respective brownfields efforts and activities. The Ohio EPA maintains a statewide brownfields inventory database.<sup>32</sup> The Ohio EPA site allows user sorting and searching by name, location, and other attributes. The database provides site specific details on history, environmental assessment, etc. The Cuyahoga Planning Commission also maintains a publicly available GIS portal including brownfield parcels.<sup>33</sup>

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<sup>31</sup> This explains why the Northcoast Brownfields Coalition has sought to allocate 80% of its BRLF dollars to projects within Cleveland's urban core (City of Cleveland and Cuyahoga County, 2009).

<sup>32</sup> This website is available at <http://www.derr.epa.ohio.gov/BrownfieldInventory.aspx>

<sup>33</sup> This website is available at <http://planning.co.cuyahoga.oh.us/gis/>

It is important to note that initially website/GIS information was not accessed by residents due to limited access and a lack of basic and technical computer skills. CPC worked with local libraries to provide access to the internet and initiated training sessions to increase computer skills. While strong efforts towards access and transparency have been made by the County and City agencies, no centralized resource for brownfields information exists. The Northcoast Brownfields Coalition, which represents the collaborative efforts for brownfields assessment, cleanup and redevelopment for the area, is a logical source to centralize information. A dedicated webpage, under its leadership with links with information aimed not only at business interests but community members as well could prove valuable.

### **Lessons for Delaware**

- The importance of interagency cooperation and coordination to identify and leverage opportunities and resources for effective brownfield redevelopment;
- The opportunity to integrate sewer/stormwater concerns into brownfields cleanup and redevelopment efforts;
- The value in identifying obstacles/barriers to community participation and devoting resources and effort to overcome them; and
- The need for targeting economic benefits back into brownfields areas/residents.

## **D. East Palo Alto, CA**

East Palo Alto, CA is an often cited example of how area-wide brownfield assessments can successfully spur revitalization efforts. Since 1997, the city has developed strong partnerships with the EPA, HUD, and local community and environmental organizations to leverage funding and maximize brownfield cleanup and redevelopment opportunities and quality of life within the city. The City has received numerous EPA grants and in 1998 was appointed an EPA showcase community. In addition, EPA appointed a full time environmental/community involvement expert to help the City in its initial brownfields efforts.

### **Background**

The City of East Palo Alto is bordered by the municipalities of Menlo Park and Palo Alto as well as the San Francisco Bay. The relatively small size of the City (2.6 square miles) and its high density (approximately 11,000 residents per square mile) have made space a premium. It has also underscored the need for holistic urban redevelopment that balances economic and social priorities of the community. The city inherited a legacy of polluted sites including the area's largest industrial park at 130 acres, and the former 9 acre county landfill located on bayfront property. Metal, arsenic, PAH and PCB contamination of the soil and groundwater are a reminder of not only the landfill, but auto wrecking yards, metal plating industry, and waste processing facilities that once inhabited the City. (EPA Region 9, 2011)

As of the 2010 Census, the population of 28,500 clearly exhibited the indicators of an environmental justice community. The population is composed of over 80% minorities with 65.4% Hispanics and 16.7% African-Americans. The unemployment rate of approximately 22% was over twice the national average and 19% of all residents were living below the poverty line. Per capita income was only \$18,000 compared to the state average of almost \$30,000. In addition, affordable housing and cleanup programs to protect the health of residents were also identified as priority needs (NEJAC, 2006).

### **Leadership and Coordination**

Restoration and redevelopment efforts in East Palo Alto grew from strong communication between property owners, community members, City and State agencies, and the federal government. Coordination of brownfields efforts has been handled jointly by the Redevelopment Agency of East Palo Alto (RDA) and the City of East Palo Alto. The RDA was an independent agency whose mission focused on returning brownfields and other contaminated lands to economic assets that would create new jobs and increase the city's tax base to improve



city services for all residents.<sup>34</sup> The City of East Palo Alto is in charge of the day-to-day management of brownfields efforts. The City and RDA have also worked closely with following groups to make its brownfields program successful:

- California Department of Toxic Substances Control (DTSC);
- U.S. EPA;
- U.S. HUD;
- National Institute of Environmental Health Sciences (NIEHS); and
- Local community groups/residents.

The RDA and the City worked together to first identify redevelopment areas within the Ravenswood Business District. They focused on project areas that had previously experienced stalled development due to perceived contamination and the associated high cleanup costs. The planning process for identified redevelopment areas directly involved community leaders. (Midpeninsula Regional Open Space District, 2013) This planning process led to the development of a General Plan for each redevelopment area. Subsequent remediation and redevelopment then had to comply with the community-developed General Plan. (Youth United for Community Action, 2011)

While the City of East Palo Alto did not have the resources to dedicate a full-time staff position solely to brownfields redevelopment, the EPA recognized this need. It appointed a full-time environmental/community involvement expert to help the City and the RDA in their community participation efforts and to help them leverage other resources to ensure the success of the program (NEJAC, 2006). The DTSC has helped fund cleanup efforts while HUD and NIEHS have helped with housing and environmental monitoring efforts within East Palo Alto. Indeed, the city's ability to work with the EPA, gain support from Congressional representatives and form partnerships with local organizations has strengthened the brownfields program (Lee, 2013).

## **Funding Mechanisms**

At the outset, East Palo Alto sought to “create a national model for other small, urban communities struggling to overcome economic and environmental challenges of brownfield redevelopment and economic revitalization” (EPA, 1999). One of its goals was to build internal financing capacity via the RDA and the use of its Brownfield Cleanup Revolving Loan Fund (BCRLF). Since 1997 the City has leveraged over \$14 million in state and federal investments into brownfield assessment, remediation and redevelopment.

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<sup>34</sup> In 2011 the California Legislature approved the dissolution of all municipal RDAs. RDAs were officially dissolved as of February 1, 2012. Successor Agencies have been established to manage redevelopment projects currently underway.

- At the federal level, East Palo Alto has utilized numerous EPA grants (for assessment, cleanup, and to establish a brownfields cleanup revolving loan fund), HUD Section 108 housing loans and economic development grants, and DOT grants;
- At the state level, California's DTSC revolving loan fund,<sup>35</sup> the DTSC Prototype Environmental Oversight Agreement (EOA)<sup>36</sup> and the State's Prospective Purchaser Policy<sup>37</sup> have helped brownfields efforts; and
- At the local level, East Palo Alto has funded Brownfield area-wide redevelopment through tax increment financing<sup>38</sup> and the Brownfield Revolving Loan Cleanup Fund.

## **Community Involvement**

East Palo Alto has been commended for actively involving community members and organizations within the brownfields process. EPA staff has highlighted the importance of relationships the city has formed with the community as a main reason for continued program success (Lee, 2013). While a uniform, formal mechanism for community decision-making on brownfields redevelopment has not been adopted, City staff has worked directly with community members, leaders and organizations in the formation of redevelopment plans. Public meetings and design charrettes have served as a primary means of incorporating community input and promoting community-driven redevelopment (EPA & NALGEP, 2005).

Given the limited area of the City (2.6 square miles) and the needs of the community, attempts were made to include community residents and organizations at the outset of the brownfields process, particularly with respect to redevelopment plans. This has led to a two-way process of community involvement whereby the community has had a chance to provide initial input and continuous feedback at different stages in the brownfields process. The following examples have helped promote community participation in East Palo Alto:

- Public forums have been used to initiate local community groups into independently drafting alternative plans that are used as a basis for site specific development plans;
- The community-based plan for the Ravenswood Business District included a diverse range of residents (including community building and Inter-faith organizations) brought together by the ETB-EPA (Envision-Transform-Build East Palo Alto) Coalition<sup>39</sup>;

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<sup>35</sup> The California DTSC provides loans and sub-grants for cleanup activities throughout the state of California.

<sup>36</sup> The EOA allows RDAs to receive technical assistance, consultation and supervision of site cleanup from the DTSC.

<sup>37</sup> A Prospective Purchaser Policy allows potential site buyers and tenants to enter into an agreement with the DTSC that the DTSC will not pursue enforcement actions for site contamination.

<sup>38</sup> Tax increment financing is the collection of increased tax revenues from property developments for financing of new infrastructure in a neighborhood. See <http://old.ci.east-palo-alto.ca.us/economicdev/planandinfrastr.html>

<sup>39</sup> More information on the ETB-EPA Coalition's process and the Community Based Plan can be found at <http://urbanhabitat.org/uh/ed/gcc/ETB-EPA>.

- The Coalition sponsored workshops and education sessions to relay technical and policy aspects which assisted residents in formulating their own community plan; and
- In some cases, as with the Cooley Landing Site, the finalization of site development options has involved direct votes from community members.

According to community representatives, the high level of support and buy in from local organizations, foundations and community residents indicate the inclusiveness of community residents in East Palo Alto's brownfields process. For example, in the case of the Ravenswood Business District, it was the ETB-EPA Coalition's realization that vibrant participation from residents would not have materialized without the strong ties that existed between community organizations in the Coalition and community residents (Nguyen, 2013).

### **Economic Aspects**

East Palo Alto has done an exemplary job of tracking the economic benefits of brownfields efforts on the community. Perhaps the most significant accomplishment came as a result of the area-wide assessment approach taken to brownfields efforts, especially with respect to the 130 acre Ravenswood Industrial District. The area-wide (rather than individual property/ piece meal) assessment reduced anticipated cleanup costs from over \$30 million to less than \$5 million (EPA, 2002). This was notable in decreasing concerns and spurring remediation and redevelopment efforts.

Metrics to measure property tax, sales tax, and job creation all exhibited positive signs. Overall, East Palo Alto saw land values double and property taxes triple within project areas (Lee, 2013). Assessed property value within brownfields project areas increased by approximately \$329 million. An additional \$2.2 million in sales tax revenue was also generated via redevelopment of brownfields areas. No efforts were uncovered, however, which target these revenues back into the impacted communities. Finally, the City responded to community needs as brownfields efforts facilitated the creation of 1,200 new jobs with over 400 of them going to local East Palo Alto residents.

### **Environmental Aspects**

East Palo Alto adopted a city-wide assessment plan at the outset of its brownfields efforts in 1997. Detailed environmental measures, however, were not immediately available from the city, and tracking of metrics occurs mainly through self-reporting for EPA grant reports. Analysis reveals that at least 21 individual sites have been remediated and redeveloped or are under some stage of redevelopment, including the 9 acre Cooley Landing site.

Cooley Landing may be noted as a significant environmental success. The cleanup eliminated exposure pathways from lead, PCB, and pesticides for adjacent environmental justice community residents and native animal communities. This nine acre peninsula on the San Francisco Bay was redeveloped as both a nature preserve and an environmental education center. The first phase of the Cooley Landing project was successfully completed in 2012 and opened to public use. The project site provides enhanced habitat for the endangered California Clapper Rail and endangered Salt Marsh Harvest Mouse, while providing habitat for a host of other native species. Native landscaping has replaced existing non-native weedy species (Lee, 2013).

## **Social Aspects**

In keeping with its commitment to promoting holistic development, brownfields efforts in East Palo Alto have sought to integrate community concerns into redevelopment options. Affordable housing and local employment opportunities were two priority concerns among residents. The city has been progressive in acknowledging that gentrification is an issue and has tried to ensure that a percentage of new housing units are low income units. A City housing ordinance requires developers to reserve a certain fixed proportion of their new units for sale as low and middle income units (City of East Palo Alto, 1996). At least 7 sites have been or are being redeveloped for housing with 37 homes (7 below market rate) constructed with at least 118 more (23 below market rate) in some phase of construction. (Lee, 2013)

The City has also tried to help local residents find employment. Its First Source Referral System provides residents first notice of project-related job availability and employers must make a good faith effort to hire local applicants. Avenues also exist to provide jobs training to local residents. Employers can seek specialized job training for applicants through the First Source Referral Systems job training programs (City of East Palo Alto, A, 2010). The city also developed a partnership with Opportunities Industrialization Center West<sup>40</sup>, to integrate brownfields redevelopment with jobs training programs. These have all been integral into creating over 400 new jobs for local community members.

Brownfields efforts in East Palo Alto have also struck a good balance in redevelopment options. The Cooley Landing site was redeveloped as a nature preserve and environmental education center. At least 4 sites have been or are being redeveloped as mixed-use developments (housing/commercial/retail). Other redevelopment uses have included 1 police station and 1 health clinic (Lee, 2013).

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<sup>40</sup> Now JobTrain which can be accessed at <http://www.jobtrainworks.org/about-us/overview>.

## **Access and Transparency**

East Palo Alto has relied almost entirely on face-to-face meetings to relay information/ updates on its brownfields efforts. As a result, there is significant room for improvement when it comes to access and transparency of its brownfields program. The City contracted with GIS Planning Inc. from 2003 to 2009 to create GIS data layers and a website that provides public access to soil and groundwater conditions, deed restrictions, zoning, parcel boundaries and additional information that can helpful to the community.<sup>41</sup>

While information is available to the public on site specific contamination, the City lacks significant publicly available information about its brownfield assessment, remediation and redevelopment efforts to date. A centralized public resource containing information about the City's Brownfield process could prove worthwhile for community members.

## **Lessons for Delaware**

- The need for dedicating staff and resources to building relationships with regional and federal agencies and communities required for sustainable brownfields redevelopment;
- The value of empowering communities to take the initiative and claim ownership in the redevelopment planning process;
- The importance of seeking community involvement through community organizations that have established relationships with residents.
- The catalyzing effect area wide assessments play in brownfield redevelopment.
- The ability for successful brownfields redevelopment to address balanced reuse options that benefit local communities.

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<sup>41</sup> The website to access this information is available at <http://www.epagis.com>.

## **E. Milwaukee, WI**

Milwaukee, WI has run an extremely active brownfields program since 1997. The City was named an EPA Brownfields Showcase Community in 2000 and has been awarded more than 13 EPA grants for brownfields assessment, cleanup, revolving loans, and job training totaling more than \$11 million. The City's brownfields efforts have resulted in more than \$700 million in private redevelopment efforts and the creation or retention of over 5,000 jobs.

### **Background**

The City of Milwaukee has a noted industrial history, one that grew largely in the early 1900's. Most notably, the city was home to a thriving machining industry for rail cars, electric motors, farm machinery and cranes, cattle and pork processing, tanneries, and rail car and locomotive manufacturing. Following a pattern seen throughout much of the country, manufacturing declined in the latter half of the 1900s leaving behind hundreds of blighted and abandoned sites within the city. There are currently some 10,000 brownfields sites throughout the state with over 500 in the City of Milwaukee that have potential or existing contamination (Wisconsin Department of Natural Resources, 2012a).

The profile of the City coincides with environmental justice concerns. As of 2011, Milwaukee was home to 597,867 residents with 40% of the city's population being African American and 17.3% Hispanic or Latino. City-wide per capita income was \$19,111 compared to \$27,192 for the state and 27% of residents were below the poverty level, over twice the 12% rate for the state. Notable projects areas such as the 30<sup>th</sup> Street Corridor which were home for much of the city's industrial and manufacturing jobs in the past have seen drastic increases in unemployment, vacancy rates and poverty. The most recent census show neighborhoods in the 30<sup>th</sup> Street corridor have 19% unemployment, 15% housing vacancy, and 34% poverty rates.

### **Leadership and Coordination**

Milwaukee has pursued an integrated approach to brownfields that brings in scientists, engineers, planners and community development experts into the process. The primary goals of the City's brownfield efforts are to attract private investment, create jobs and restore the environment (DeSousa, 2006). In order to accomplish these, Milwaukee has approached brownfield redevelopment through area-wide cleanup initiatives (called "redevelopment corridors") that integrate multiple partners in redeveloping communities and brownfields. Program managers note the strengths of this approach maximizing resources, minimizing costs and coordinating a common, long-term vision for redevelopment (Rogers, 2013). The main partners involved with brownfields efforts within the City include:

- Department of City Development (DCD);
- City Health Department;
- City Redevelopment Authority; and
- Milwaukee Economic Development Corporation.

In addition, the EPA, the Wisconsin Department of Natural Resources (WDNR), the Wisconsin Economic Development Corporation (WEDC), and the state Department of Commerce (DOC) all play roles in brownfields efforts. Factors that are used to prioritize redevelopment areas include: planning prioritization of catalytic projects, areas of aggregated brownfields/presence of larger brownfields, and lack of market involvement requiring city involvement to eliminate blight (Dettmer, 2013). To simplify the redevelopment process the City created a centralized, one-stop approach for permits in which the DCD oversees brownfield cleanup, planning, development and funding. The WDNR, the WEDC, and the state DOC all work closely to streamline regulatory and funding of brownfields, while working with the City. This has been especially useful in focusing on area-wide brownfields efforts (City of Milwaukee, 2012). This streamlining of regulatory permitting and financing has helped overcome potential barriers to private investment in brownfield redevelopment (DeSousa, 2006).

## **Funding Mechanisms**

The city of Milwaukee and state of Wisconsin have successfully established multiple funding streams to facilitate brownfields efforts. It should be noted that the WDNR created a manual identifying available funding opportunities for private developers, public authorities, municipalities and non-profits that can be utilized in the assessment, remediation and redevelopment of brownfields.<sup>42</sup> Since some funding streams are often not brownfields specific, this resource provides an avenue for municipalities, developers and non-profits to efficiently identify available funding mechanisms (WDNR & WDC, 2011). Funding sources include:

- At the federal level, Milwaukee has been awarded 13 EPA Brownfields grants for Site Assessment, Cleanup, Jobs Training and Revolving Loan Grants;
- At the state level, Milwaukee has available Blight Elimination and Brownfield Redevelopment (BEBR) grants,<sup>43</sup> Brownfield Greenspace and Public Facilities grants<sup>44</sup>, Brownfield Site Assessment grants,<sup>45</sup> and Ready for Reuse loan,<sup>46</sup> local government liability exemptions, and state administered voluntary cleanup program; and

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<sup>42</sup> This publication is available at: <http://dnr.wi.gov/files/PDF/pubs/rr/RR539.pdf>

<sup>43</sup> The BEBR grant is administered by the state DOC. It funds assessments, property acquisition, investigations, cleanup, rehabilitation and redevelopment for municipalities, non-profits, individuals and businesses.

<sup>44</sup> The Brownfield Greenspace and Public Facilities grant is available to municipalities, redevelopment authorities, community development authorities and housing authorities that are prepared to do a cleanup.

<sup>45</sup> The Brownfield Site Assessment Grant is administered by the WDNR. Funds are available to municipalities, redevelopment authorities, community development authorities and housing authorities.

- At the city level, Milwaukee has established the Brownfield Site Assessment Matching Grant Program,<sup>47</sup> an Environmental Testing Fund,<sup>48</sup> a brownfields revolving loan fund capitalized by an EPA BCRLF grant, as well as tax increment districts to finance remediation and cleanup activities as well as the infrastructure needed for revitalization.

## **Community Involvement**

Although Milwaukee does not have an institutionalized mechanism to invite community participation, both EPA staff and community groups have noted the City's ability to build partnerships with community groups as an important strength of its brownfields efforts (Rogers, 2013; Driscoll 2013). The City has attempted to facilitate community participation and feedback in brownfields identification, remediation and redevelopment. All of the following have contributed to its strong community involvement component:

- The City has dedicated resources to a community development staff composed of experts with existing connections to the community (Rogers, 2013);
- Community organizations have helped the City identify priority sites for potential assessments which are then cross-listed to its database of sites (Dettmer, 2013);
- Community members and stakeholders are updated on assessment progress for priority sites via Corridor newsletters, city web pages, staff presentations to neighborhood organizations, and Corridor meetings (City of Milwaukee 2012);
- The City DCD holds public meetings and design charrettes to guide the redevelopment process (Dettmer, 2013); and
- Milwaukee has focused on job creation in its redevelopment efforts since it has been identified by the City's residents as a primary area of concern (Driscoll, 2013).

While the City does not provide funding to facilitate community involvement, they encourage groups to engage in community projects. Milwaukee's work with Groundwork Milwaukee is an example of its involvement in partnerships with community organizations that represent City residents. Groundwork Milwaukee has participated in several projects to develop stormwater management Best Management Practices (BMPs) such as rain gardens and green roofs as well as community gardens in the Harambee neighborhood. It has also partnered with the Lisbon Avenue Development Corporation (LAND) to transform a former gas station into a park and works with the city to develop community outreach and education plans related to a phytoremediation project also in the same neighborhood (Groundwork Milwaukee, 2012).

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<sup>46</sup> The Ready for Reuse Loan program is administered by the WDNR through an EPA Revolving Loan Fund grant. Loans are available for activities such as environmental consulting fees and public participation costs.

<sup>47</sup> Brownfield Site Assessment Matching Grant Program funds are available to property owners within the City.

<sup>48</sup> The Environmental Testing Fund provided funds to test for contamination on tax delinquent properties. It was recently replaced with the DCD Development fund for testing, remediation and demolition of properties.



## **Economic Aspects**

The City, under the direction of CDC has been actively involved in over 87 brownfield redevelopment projects. These projects have leveraged \$766.1 million in private investment and created and/or retained 3,384 jobs (Milwaukee Department of City Development, 2012). The Brownfields Revolving Cleanup Fund, initially capitalized with EPA funding, was especially useful in remediation and redevelopment within the redevelopment corridors identified by the City. The Fund helped leverage \$329 million in investments and created 2,600 jobs (Rogers, 2013).

Unfortunately, Milwaukee does not have an institutionalized mechanism to track overall economic metrics in terms of job creation, property and/or sales tax revenue as a result of brownfields redevelopment.

## **Environmental Aspects**

Milwaukee has been successful in addressing environmental aspects with regards to its brownfields program. Since 1998 Milwaukee has assessed well over 100 sites (largely via the Milwaukee Redevelopment Authority) within the City and invested \$21.7 million dollars in testing and cleanup. 41 sites have been remediated and received “closed” status from the Wisconsin DNR.<sup>49</sup> Overall, 382 acres of brownfields have been cleaned up and/or redeveloped.<sup>50</sup>

The city has also identified opportunities to address brownfields redevelopment within a wider context of environmental goals, particularly with respect to stormwater management. The highlight of Milwaukee’s success in its redevelopment efforts has been the Menomonee Valley Project, with several impressive accomplishments including 300 acres of brownfields remediation, riverbank restoration, native plantings and establishing recreational areas (Driscoll, 2013; DeSousa, 2006). In addition, brownfields assessments throughout the 30<sup>th</sup> Street Corridor facilitated stormwater and groundwater projects within specific sites that ultimately resulted in the installation of green stormwater practices that address area water quality and runoff quantity concerns (City of Milwaukee, 2012).

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<sup>49</sup> Found via search of the Bureau for Remediation and Tracking System (BRRTS) database for cases in the city of Milwaukee with “REDEVELOPMENT AUTHORITY CITY OF MILWAUKEE” as an applicant/responsible party.

<sup>50</sup> 262 acres were remediated and/or reused via the Revolving Loan Fund. The remaining additional 53 acres were remediated, and/or redeveloped via EPA cleanup and assessment grants (Rogers, 2013).

## **Social Aspects**

Milwaukee has made significant progress in regards to the social aspects of brownfields redevelopment. Although most of the sites have focused on industrial and commercial redevelopment in accordance with resident concerns, re-use options have included green spaces/recreational areas (such as the previously mentioned Menomonee Valley Project) and urban agriculture. For example, an urban agriculture feasibility study was initiated at a 1.7 acre site in the north 30<sup>th</sup> Street Corridor. The study culminated in a workshop with local urban agriculture experts and helped secure an EPA Cleanup Grant in 2009 for redevelopment of the site (City of Milwaukee, 2012; EPA, 2009).

It is noteworthy that the City began addressing human and environmental health issues among residents living within brownfield redevelopment corridors in 2010. In accordance with this focus, the City provided lead abatement training for local contractors and handymen, hazard training and the removal of 100 pounds of hazardous chemicals from local schools, training for 170 community health workers and healthcare providers for the impacted areas, blood lead screening for community residents, asthma testing of local residents and lead paint removal in 100 homes (City of Milwaukee, 2012). In addition, the City has identified gentrification in the redeveloped downtown market area as a minor issue. While the City does not typically redevelop brownfields into housing units, administrators note that several thousand low income housing units have been developed over the past ten years within Milwaukee, many within these neighborhoods (Dettmer, 2013).

## **Access and Transparency**

Milwaukee has been exemplary with regards to access and transparency. The Milwaukee DCD maintains a webpage describing brownfields redevelopment in Milwaukee, the goals of brownfield redevelopment in the city, sites available for redevelopment, financial incentives, and links to state and federal resources for brownfields redevelopment. Direct contact info on staff members that work on brownfields issues is also provided. The city also maintains an inventory database of brownfield properties that includes tax delinquent properties that the City has not foreclosed on because of potential contamination, privately owned/underutilized sites with potential contamination, and city owned sites with potential or real contamination (City of Milwaukee, 2012).

The public portal to this information is maintained at the state level by the Bureau for Remediation and Redevelopment Tracking System (BRRTS).<sup>51</sup> The BRRTS is searchable by name, location, status (closed or open), impacts, date, and type of contaminant. The information

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<sup>51</sup> BRRTS is available online at: <http://dnr.wi.gov/topic/Brownfields/botw.html>

is exportable to ArcGIS formats. Any sites that require monitoring are identified and sites that receive “closed” status but retain contamination are required to: give notice of residual contamination; restrict certain actions to protect public and environment; and are maintained within BRRTS and Wisconsin DNR GIS registry. The state of Wisconsin also hosts an activities tracking chart for all properties within the corridor undergoing assessment work.

### **Lessons for Delaware**

- The importance of integrating stormwater management and ecosystem restoration into brownfields activities;
- The value of providing an easy to access and easily navigable comprehensive database on brownfields for community residents;
- The need for dedicated resources devoted to engaging community participation;
- The value of multiple information sources in providing avenues for community engagement and participation; and
- The need for focusing on residential health and environmental aspects within brownfields areas.

## **F. Pittsburgh, PA**

The City of Pittsburgh, PA has undergone a dramatic transformation from an industrial center to a diversified economy which is considered one of the nation's "Most Livable Cities." Central to this makeover has been the remediation and redevelopment of large brownfields areas within the City. Beginning in the mid-1990s the City was awarded over \$800,000 in EPA grant funding for brownfields assessments and the establishment of a revolving loan fund. The City used that money to leverage other funding and has successfully remediated and redeveloped 460 acres of brownfields areas.

### **Background**

The City of Pittsburgh is well-known historically for its steel industry, earning the nickname the "Steel City." The decline of the US steel industry in the 1970s and 1980s left the city without any steel mills (only two remaining in the county) and with significant brownfields areas as a result of Pittsburgh's industrial heritage. Typical industrial sites within Pittsburgh were very large and the City has chosen to approach redevelopment by designating large project areas and tax increment districts to largely fund redevelopment activities. Brownfields efforts have focused primarily on 4 large project areas: Washington's Landing, the Pittsburgh Technology Center, the SouthSide Works, and Nine Mile Run.<sup>52</sup> (Dettore, 2008)

The loss of manufacturing jobs and decreasing employment opportunities has taken its toll on the City and its residents. Pittsburgh experienced a population decline from over 600,000 in the mid-1900s to barely over 300,000 by the 2010 Census. Median household income in the City is just over \$37,000 compared to almost \$52,000 for the state of Pennsylvania. In addition, 22% of the City's population lives below the poverty level which is almost double the State number. African-American's represent 26% of the City's population compared to just 11% of the State's overall population.

### **Leadership and Coordination**

Coordination of brownfield redevelopment largely falls under Pittsburgh's Urban Redevelopment Authority (URA). The URA is the City's independent economic development agency whose mission is to create jobs, increase the tax base and improve the vitality of

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<sup>52</sup> Washington's Landing is a 42 acre island in the Allegheny River located 2 miles from downtown Pittsburgh that was contained a cattle stockyard, meat packing plants, metal salvaging and other industrial facilities. The Pittsburgh Technology Center is a 48 acre project area located on the Monongahela River whose former uses included a coal gasification plant and a manufacturing mill. The Southside Works area is 123 acres located on the Monongahela River which formerly contained a large steel mill. Nine Mile Run is a 238 acre site located in East Pittsburgh, formerly used as a slag disposal site by steel making companies.

businesses, neighborhoods and the City's livability as a whole. Industrial site reuse and brownfields redevelopment is seen as integral to these goals. The URA acts as an agent for the city in acquiring and packaging properties for city sponsored projects (Pittsburgh URA, 2011). The URA works closely with the following actors in its brownfields efforts:

- Pittsburgh Department of City Planning;
- Various nonprofits and community groups; and
- State of Pennsylvania.

The URA identifies and acquires brownfield sites, performs remediation and installs needed infrastructure. The sites are then marketed to private investors for development based on support from local community groups. Private developers are only approved to purchase the site once it is determined the developers proposed reuse is compatible with community interests.

The role of the Department of City Planning is to organize community steering committees that ultimately guide the redevelopment process. Steering committees include staff from URA and Department of City Planning, as well as stakeholders such as community representatives, property owners and developers. Community members are able to participate in design discussions and public meetings, while other stakeholders and community groups are represented within the steering committee (Pittsburgh URA, 2011). For example, the Urban Land Institute, a nonprofit education and research institute, has been brought into the redevelopment of some projects to help determine the best reuse options for particular projects.

The State of Pennsylvania, through the Department of Environmental Protection (DEP) also provides liability assurances and incentives that are helpful for development interests seeking to re-use brownfields properties.

## **Funding Mechanisms**

While Pittsburgh has leveraged some federal funding sources, it has primarily financed assessment and remediation activities through state and local mechanisms.

- At the federal level, Pittsburgh has leveraged multiple EPA grant awards;
- At the state level, Pittsburgh has used Pennsylvania's DEP's Industrial Site Reuse Grants<sup>53</sup>; and
- At the local level, Pittsburgh financed a \$60 million bond to establish the Pittsburgh Development Fund (PDF), which allows URA to purchase sites and install infrastructure

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<sup>53</sup> The ISRG provides grants or loans up for assessments and remediation to public entities, non-profits, and private companies not responsible for the contamination.

to spur private investment.<sup>54</sup> The fund has also been used as a revolving loan fund for private investors. Tax increment financing is also used to spur redevelopment within certain zones, although the financing is not brownfield specific.

Overall, the City's strategy has been to use the URA to tackle the costs of assessment and cleanup of brownfields properties. Infrastructure capacity is then financed through tax increment districts while property development costs are largely left to the developers. By purchasing and packaging remediated sites, the URA provides shovel-ready sites for developers who do not have to worry about securing liability relief or choosing and designing site remedies. This provides a significant incentive to development interests who might otherwise choose to develop greenfields sites or locations in other cities.

### **Community Involvement**

The use of tax increment zones for brownfields project areas has helped ensure that community interests are taken into account in determining compatible and best-reuse options for impacted communities. While the process to incorporate community involvement has varied from project to project depending on needs, feedback from the community has been positive in regards to the community having input in brownfield redevelopment (Brannan, 2013; Sukenik, 2013). Community participation has largely taken the form of the following:

- Planning forums are put in place at the outset of redevelopment. They are designed to make sure that community concerns and desires are expressed to City planners before redevelopment RFPs are issued;
- Steering committees then follow. They meet monthly and seek to formalize re-use requirements and ensure that redevelopment options and ongoing plans are compatible with the aforementioned community concerns/needs; and
- The inclusion of a wide-range of nonprofits and community groups that contribute to these.

Both planning forums and steering committees are comprised of URA and the Department of City Planning staff/representatives. Planning forums also include other stakeholders including community members, community organizations and other stakeholders and seek to emphasize community preferences (Pittsburgh URA, 2011).<sup>55</sup> Steering committees also include neighborhood association and community organization representatives and developers and

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<sup>54</sup> Created in 1995 by the city of Pittsburgh the PDF is administered by the URA and financed through a tax increment district. PDF funds have been used for 13 brownfield projects in addition to providing financing for 49 non brownfield related projects as of 2004.

<sup>55</sup> For example, the South Side Planning Forum represented different organizations and community groups within the South Side community in monitoring community planning and redevelopment activities.

review redevelopment plans closely in accordance with those preferences (Pittsburgh URA, 2011).

Community partners have included a wide range of neighborhood/community and nonprofit organizations that represent different interests. In addition to the Urban Land Institute, Riverlife, Friends of the Riverfront and Pittsburgh United have also been involved. Riverlife is a nonprofit organization which provides an avenue for community participation in Pittsburgh's redevelopment projects. Friends of the Riverfront, is an advocate for open spaces that pursues contiguous public access to the riverfront and the creation of greenways. Pittsburgh United is an organization that works to promote social justice by ensuring low and moderate income communities can share in economic prosperity generated by development.

### **Economic Aspects**

In keeping with its focus on job growth and increasing the tax base, Pittsburgh has kept close track of the aggregate economic metrics associated with brownfield projects. It has also been successful with respect to the economic benefits of brownfields redevelopment. Overall, the city has leveraged over \$298 million in public investment largely for assessment and cleanup activities. In addition, public investment has spurred over \$650 million in private redevelopment investments. The results coming from the redevelopment of brownfields is equally impressive. The project areas have resulted in \$18 million in additional property taxes collect annually and have created over 7,300 jobs (Nemani-Stranger, 2012).

Unfortunately, numbers from additional sales tax revenue have not been tracked. In addition, no mechanism exists to direct these economic benefits back into the affected communities and their residents. Finally, it would be beneficial for the City to not only track the numbers of jobs created but closely monitor the types of jobs provided, how long the jobs exist (temporary or long-term) and who holds those jobs (do they go to people in the affected communities or not).

### **Environmental Aspects**

Pittsburgh has remediated 451 acres of brownfields within the City. Unfortunately, no estimates exist on the number of brownfields sites or acres that still need to be remediated. This would be beneficial to determine the scope of the brownfields problem that still exists within the City. Overall, Pittsburgh has done a good job of documenting its assessment and remediation efforts such as looking at contaminants/areas of concern and in documenting site history. It has also

been successful in cleaning up brownfields sites so that they can be available for multiple uses rather than just new industrial/commercial properties.<sup>56</sup>

For example, phase one and phase two assessments conducted on Nine Mile Run, a 238 acre former dump site used by the steel industry, resulted in major remediation efforts of the heavily impaired Nine Mile Run Stream and became one of the nation's first residential brownfields redevelopment projects (EPA, 1996). Washington's Landing development, formerly a meat packing center, stockyard and then industrial center, contained traces of polycyclic aromatic hydrocarbons (PAHs) and polychlorinated biphenyls (PCBs). Remediation efforts were meticulously conducted and have made the site usable for a number of redevelopment projects. Numerous other examples exist as well (Dettore, 2008).

### **Social Aspects**

Existing case studies document that brownfields efforts in Pittsburgh have taken into account the social aspects of redevelopment. Multiple re-uses have occurred on brownfields properties that promote sustainable community development. Redevelopment figures indicate that over 100 acres have been turned into parks. Moreover, almost 700 housing/rental units have been created in redeveloped areas. (Pittsburgh URA, 2009) These numbers do not include a number of public parks, open spaces, mixed uses and community oriented redevelopment in which acreage and site numbers have not been documented. This underscores a fundamental weakness in that the City has not created a system to track and aggregate redevelopment uses. This makes it difficult for the City to measure the extent to which it is meaning the goals sustainable community development.

For example, the numerous riverfront projects have raised property values significantly in the Pittsburgh metropolitan area. The Department of City Planning division ensures that gentrification issues are addressed and that affordable and fair housing is a priority by making use of federal to provide adequate affordable housing for people of low and moderate income families (Pittsburgh City Planning, 2013). At the same time, however, the City Planning division does not track the extent to which new and future housing/rental units created via redevelopment are intended for low to moderate income residents.

### **Access and Transparency**

The URA provides documentation on brownfields activities in Pittsburgh and brownfields projects on its website.<sup>57</sup> It provides information on past projects, current sites available for

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<sup>56</sup> This is directly related to the large amount of funding available through the Pittsburgh Development Fund (PDF) which has focused on assessment and cleanup activities. This strategy of having the City first perform cleanup activities prior to marketing brownfields for redevelopment has produced environmental benefits.



redevelopment through the URA, and existing resources and partner agencies. This spatially linked database is designed to provide a means for prospective developers to identify sites within the City and pertinent information regarding them such as zoning. In addition, the State of Pennsylvania, under the Department of Environmental Protection, provides a similar linked information portal geared towards redevelopment interests.

The City of Pittsburgh, however, lacks a comprehensive database geared towards community residents that lists site specific information regarding contaminants, levels of contamination and remediation activities. A searchable database or GIS system, available to the public which includes this information would provide the community with greater access and transparency with regards to brownfields in the City.

### **Lessons for Delaware**

- The need for coordination and feedback between City planners and community members through different stages of the brownfields process;
- The strategic value in providing sites that have already been remediated to redevelopment interests;
- The significance of tightly tracked economic metrics in measuring economic benefits of brownfields redevelopment; and
- How cleaning up brownfields sites for the possibility of multiple-use options provides environmental benefits to community residents.

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<sup>57</sup> The URA brownfields website is available at [http://www.ura.org/working\\_with\\_us/brownfieldProjects.php](http://www.ura.org/working_with_us/brownfieldProjects.php)

## **G. Portland, OR**

The City of Portland, OR, boasts a long history of urban redevelopment. Oregon passed legislation in 1979 to limit urban growth, establishing boundaries around existing municipalities to contain urban sprawl (Abbot, 1991). As a result, demand for urban property increased and the City adopted practices for remediating properties several years before the enactment of the EPA's brownfields program (Bateschel, 2012; Obern, 2012). This gave Portland an advantage in the competition for federal grant money. Since 1996, nearly \$10 million in competitive grant money has been awarded to government and private entities for brownfields redevelopment. In 1998, Portland was designated as an EPA Brownfields Showcase Community.

### **Background**

With almost 600,000 residents, Portland is the most populous city in the state, and the second most populous within the Pacific Northwest. The municipal city limits extend into Multnomah, Washington and Clackamas counties. An estimated 2,300 brownfields lie within the tri-county region. Only 580 of these (covering 3,500 acres) have been officially designated as brownfields. The remaining "shadow inventory" includes 1,730 suspected sites covering roughly 2,777 acres. The majority of brownfields were formerly small commercial sites: gas stations, repair shops and dry cleaners (Metro, 2012).

According to the 2010 U.S. Census, minorities make up over 20 percent of the population in Portland (Hispanics at 9.4 percent, Asians at 7.1 percent, and African Americans at 6.3 percent). Though the median household income is high (\$50,177), roughly 17 percent of Portland's residents live below the poverty level.

### **Leadership and Coordination**

Multiple agencies at different governmental levels share overlapping responsibilities in brownfield redevelopment. Primarily, the Portland Brownfields Program (PBP), which operates within the City's Bureau of Environmental Services, and the Portland Development Commission (PDC) conduct brownfield redevelopment within the City.

The PBP employs a full-time coordinator and a half-time position dedicated to community outreach. The program is primarily involved with the early stages of brownfield redevelopment: conferring brownfields status to qualified properties and providing funding for assessments. A 10-member brownfields advisory committee makes final decisions regarding the allocation of funds (Bildersee, 2012). The PDC seeks to promote economic development and urban renewal

by purchasing and remediating large, blighted properties within the urban growth boundary.<sup>58</sup> The program is coordinated by the PDC construction services manager. Staff members research sites and submit recommendations to the Commission's five-member council for approval (PDC, 2012). The following groups are also involved in brownfields efforts:

- Metro;
- Business Oregon; and
- Oregon's Department of Environmental Quality (DEQ).

Metro represents the residents of the tri-county area and seeks to coordinate policy within the region, particularly with cross-jurisdictional issues such as urban growth boundary management. The agency provides technical assistance and funding for assessment through its Brownfields Recycling Program (Bateschel, 2012). Metro has conducted extensive research on the region's brownfields, recently examining the number of unidentified brownfields as well as the potential economic costs and benefits of redevelopment (Metro, 2012). Business Oregon is the state's primary agency for business and economic development.<sup>59</sup> It provides funding to qualified applicants for site assessment and remediation (Homolac, 2012). Oregon's DEQ oversees all environmental assessment and remediation activities within the state (Wistar, 2013). It conducts (or approves) all assessment and remediation plans, and performs follow-up evaluations after remediation activities have taken place. DEQ is also responsible for maintaining a database with information on all contaminated sites within the state.

## **Funding Mechanisms**

Portland has used multiple funding sources to finance brownfields redevelopment. Federal, state and local funding sources have all been utilized:

- Different entities that operate within Portland have been awarded competitive EPA grants of just under \$10 million for brownfields assessment, cleanup, the establishment of revolving loan funds<sup>60</sup> and jobs training programs;
- State funding (from property taxes, income taxes and bond sales) has been used to support program staff and fund assessment, remediation, and redevelopment;<sup>61</sup> and

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<sup>58</sup> Although brownfields remediation only accounts for a small part of the PDC's total redevelopment efforts, most of the large-scale cleanups in Portland are conducted by the PDC (Oborn, 2012).

<sup>59</sup> It "works to create, retain, expand and attract businesses that provide sustainable, living-wage jobs for Oregonians" (Business Oregon, 2012).

<sup>60</sup> The Portland Brownfields Program and Business Oregon were both awarded grants to capitalize their revolving loan funds for the City and State respectively.

<sup>61</sup> For example, Business Oregon administers the Oregon Brownfields Redevelopment Fund which is financed through lottery bond sales and provides funds for redevelopment activities.

- At the local level, property tax revenues and various fees have helped fund program staff and redevelopment efforts.

Consistent federal funding has been essential to the success of Portland’s brownfield programs. The PBP, the PDC, Metro, Business Oregon, Oregon’s DEQ and Oregon Tradeswoman Inc. have all received federal funds to assist with brownfields activities. For example, the bulk of the PBP’s site assessment activities are supported by federal grant money (Bildersee, 2012). As a result of federal financing, including the capitalization of the PBP’s revolving loan fund, the program has had adequate money to cover all qualified applicants. Oregon Tradeswomen Inc., a non-profit dedicated to training women for jobs in traditionally under-represented fields, has been awarded multiple EPA grants totaling almost \$1 million for job training in redevelopment and environmental cleanup (Slater, 2012).

City funding has also been a key element in supporting brownfields activities. The salaries of Portland Brownfields Program staff (one full-time and one half-time employee) are funded by the City of Portland (Bildersee, 2012). In addition, the bulk of the PDC’s urban renewal projects are funded by City property tax revenues (Obern, 2012).<sup>62</sup>

### **Community Involvement**

Community participation in Portland’s brownfields activities exists on many levels reflecting the overlapping nature of the agencies involved. In particular, efforts have been made to dedicate resources to increase community involvement and to allow community members access and input in the brownfields process.

- The PBP’s ten member advisory committee, which includes community representatives, determines which projects will most benefit the community;
- The PBP provides funding for a half-time employee whose focus is on community outreach and education;
- Metro holds workshops to both educate and invite input from property owners, developers and community members (Bateschel, 2012); and
- Oregon DEQ has created a full-time Environmental Justice Coordinator position.<sup>63</sup>

Community participation is strongest at the local level. The Portland Brownfield Program serves as an entry point for many of the City’s brownfield projects. Its ten member advisory committee, comprised equally of community activists and government employees, elect which projects to

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<sup>62</sup> The PDC matches all EPA grant funds dollar for dollar which has contributed to its success in winning highly competitive federal grants (Obern, 2012).

<sup>63</sup> The mission of the EJ Coordinator is “to help ensure the meaningful involvement of all potentially affected communities in DEQ’s work” (DEQ, 2012c).

pursue. The committee's community representatives are unpaid and were already civically engaged within the community. The residents of disadvantaged communities, where brownfields are common, do not participate (Van Dyke, 2013). The agency compensates for this by proactively engaging the community via the half-time position dedicated to community outreach (Bildersee, 2012).

There are also several independent organizations within Portland engaged in brownfield redevelopment. In addition to Oregon Tradeswomen Inc., two other organizations, Verde and Groundwork Portland, collaborate with the city's brownfield programs and advocate for green development in historically underserved communities (Bildersee, 2012).

### **Economic Aspects**

Portland has not assessed the economic impacts of brownfields redevelopment; however, each agency could point to individual success stories (Bildersee, 2012; Bateschel, 2012; Obern, 2012). The Arciform business complex, for example, was once the site of an abandoned gas station. It is now home to an architectural firm, dance studio, and coffee shop. The project was granted a BEST (Businesses for an Environmentally Sustainable Tomorrow) award from the City for promoting both economic growth and environmental stewardship (PBP, 2012a). No aggregate numbers, however, exist for the total number of businesses, jobs, or tax revenues generated as a result of brownfields redevelopment. Business Oregon has submitted a proposal to conduct such an assessment (Homolac, 2012).

The future benefits of brownfield redevelopment in Portland are sizeable. Metro recently conducted a study that suggests that full exploitation of all un-remediated brownfield lands would yield an estimated 71 million square feet of new development space, 69,000 new jobs, and between \$324 million and \$427 million in additional property tax revenue (Metro, 2012).

### **Environmental Aspects**

The PBP, the PDC and the DEQ were able to cite individual projects that resulted in environmental benefit. The Rollin' Tire site, for example, was remediated using a combination of traditional and innovative cleanup methods. Remediation began with the removal of leaking underground petroleum tanks and several hundred tons of soil. Cleanup was complicated, however, by the presence of an underground pipeline and a neighboring stream. Bioremediation was used to virtually eliminate all soil contamination and complete the cleanup. The city plans to convert the site into a pocket park (PDC, 2012).

Despite individual success stories, Portland's brownfields efforts suffer from a lack of definitive data to document overall environmental benefits. No numbers have been collected with respect to the total number of sites or acres that have been assessed or remediated.

## **Social Aspects**

Portland's approach to brownfields redevelopment has sought to strike a balance between economic growth and social and environmental well-being. Applicants to all of Portland's brownfield programs must satisfy a common requirement: to receive funding, a project proposal must demonstrate how it will benefit the community (Bildersee, 2012; Bateschel, 2012; Obern, 2012). Consequently, many socially-oriented projects were shepherded through the program. The PortCity Development Center site, for example, now provides housing, direct care, and career training for adults with developmental disabilities (PDC, 2012).

Although each agency could cite examples of projects that delivered social goods, no comprehensive data gauging community benefits exists. None of the programs possess stipulations requiring new businesses to hire local residents. Nor are there requirements to reinvest tax revenues into target communities.

Oregon Tradeswomen Inc. is one example of a non-profit that has stepped in to fill this gap. The program's overt focus is to recruit women from underserved communities and provide training in construction, heavy equipment use and environmental remediation. But the non-profit's success, as reflected by graduation and job retention rates, comes from an understanding of the needs of community members (Ashbrook, 2013).<sup>64</sup>

## **Access and Transparency**

Portland has been exemplary with regards to access and transparency. The PBP maintains a website with general information about the City's brownfields program.<sup>65</sup> It includes links to the assessment application, frequently asked questions and staff contact information (PBPa, 2012). The PDC also maintains a website, although it does not maintain pages dedicated exclusively to brownfield redevelopment. Detailed information relating to PDC's urban renewal projects (which often comprise brownfields) is available online. In addition, each of the websites clearly identified points of contact for brownfields issues.

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<sup>64</sup> Oregon Tradeswoman's program provides training in life skills, including strategies to deal with discrimination and domestic abuse; assistance with finding transportation and childcare; and basic career skills, such as resume preparation and budgeting (Ashbrook, 2013).

<sup>65</sup> The PBP website is located at <http://www.portlandoregon.gov/bes/35008>

DEQ's Environmental Cleanup Site Information Database (ECSI) is user-friendly and can be utilized to search for a specific site.<sup>66</sup> Each site entry includes a summary report and links to a detailed report listing. The detail report contains an in-depth description of the site, including a list of contaminants of concern, concentrations, an assessment of risk, and a history of investigative and remedial actions (DEQb, 2012). There is, however, no legal requirement for a property owner to report existing contamination. Thus, if a property owner hires an independent consultant to conduct a site assessment, the findings may not appear in the state's database (Wistar, 2013). DEQ also provides an online mapping application, the Facility Profiler 2.0, which gives point locations for all of Oregon's hazardous waste sites, including brownfields.

### **Lessons for Delaware**

- Limiting urban sprawl by setting an urban growth boundary increases demand for urban property while preserving rural land;
- The provision of dedicated and consistent funding for a city-level brownfield coordinator increases community participation;
- Community participation requires proactive rather than passive efforts;
- Successful job training programs must be comprehensive and consider the needs of community members; and
- Community participation requires access to information. Brownfield data must be made available to the community in a format that is easy to access and understand.

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<sup>66</sup> The DEQ ECSI database can be accessed at <http://www.deq.state.or.us/lq/ecsi/ecsi.htm>.

## **H. Rochester, NY**

The City of Rochester, NY saw a rise in brownfields as manufacturing declined during the 1970s. In 1995, the EPA awarded the city a brownfields pilot project to help in its brownfields efforts. Since then the City has secured over \$3 million in brownfields-related grant funding for assessment, cleanup and to capitalize a revolving loan fund for cleanup activities. Rochester has been recognized for its innovative Brownfields Assistance Program (BAP). In 2006 it received the Local Government Innovation Award from the New York State Conference of Mayors and was recognized by the National League of Cities (City of Rochester, 2010).

### **Background**

The industrial legacy and decline in Rochester led to a decrease local tax revenues, job loss and environmental problems that still exist. In 2010, Rochester identified that 3,875 of the 6,000 commercial/industrial properties within the city limits had potential environmental issues that impaired their property values and reuse options. Many of these properties are less than an acre in size and located near or next to residential areas within the city's most disadvantaged neighborhoods. The city estimates over 3,000 acres of brownfields still require assessment and possible cleanup, due in large part to a 50% increase in vacant properties since 2005 (City of Rochester, 2010).

The City clearly exhibits the characteristics of an environmental justice community. According to the 2010 U.S. Census, Rochester has a population of approximately 210,000 of which more than half are minorities. African Americans comprise almost 42% of residents while Hispanics make up over 16% of the population. As a testament to the economic difficulties residents face, from 2007-2011 31% of all residents lived below the poverty level and 12.3% were unemployed. These figures are significantly higher than those for the state of New York as a whole.<sup>67</sup>

### **Leadership and Coordination**

The brownfields program in Rochester is administered through the City's Division of Environmental Quality (DEQ). The DEQ employs a full-time Brownfields Coordinator to oversee its efforts with regards to brownfields. The DEQ initiates and performs site investigations, cleanup projects, operation and maintenance on a number of soil and groundwater remediation sites, and provides technical assistance to other city departments in brownfields redevelopment projects (Gregor, 2013). It also oversees the Brownfield Assistance Program (BAP) and the Community Brownfield Assistance Program (CBAP). Other agencies/groups that coordinate with Rochester's DEQ include:

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<sup>67</sup> The State of New York's numbers for those that live below the poverty level and unemployment are 14.5% and 8.2%, respectively.



- Rochester’s Department of Neighborhood and Business Development (DNBD)
- Monroe County Department of Environmental Health;
- New York’s Department of Environmental Conservation (NYSDEC); and
- New York’s Department of State.

Rochester’s DNBD provides an essential service for brownfields efforts by working with community-based organizations. This collaboration between DNBD staff, community groups and environmental consultants is used to identify and prioritize brownfields sites for assessment and redevelopment. These outcomes are then forwarded to the DEQ in order to secure assessment grants and services through the CBAP. The DEQ Brownfields Coordinator then reviews and approves proposed projects. DEQ’s brownfields program also plays a critical role in the DNBD’s vacant land initiative entitled “Project Green” (City of Rochester, 2009).<sup>68</sup>

The City also coordinates with NYSDEC, which provides regulatory oversight and enforcement of brownfields site cleanup and the state’s Brownfields Cleanup Program. NYSDEC and the Monroe County Department of Health are involved with all brownfields projects in site reuse planning and to ensure that all health issues are addressed (Gregor, 2013). Finally, New York’s Department of State oversees the Brownfield Opportunity Area Program (BOAP). The BOAP provides financial and technical assistance to municipalities and community organizations to take an area-wide approach for brownfields assessment and redevelopment by identifying and prioritizing community supported redevelopment needs.<sup>69</sup>

### **Funding Mechanisms**

The City of Rochester has relied on multiple streams of funding to stimulate brownfields assessment, remediation and redevelopment. Some of these financing tools, for example the Brownfields Assistance Program (BAP) operated by the City’s DEQ, have been recognized for being innovative. Funding sources have come from:

- At the federal level the City has secured over \$3 million in EPA grant funding for assessment, cleanup and the establishment of a brownfields revolving loan fund;

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<sup>68</sup> “Project Green” represents Rochester’s plan to create city-wide green infrastructure. The City anticipates that that 50% of the sites assessed under the CBAP will be used for this purpose (City of Rochester, 2010).

<sup>69</sup> The BOAP was established by the State of New York in 2003 to promote neighborhood revitalization strategies for areas with high concentrations of brownfield sites and economic distress (New York Department of State, n.d.).

- At the state level Brownfields Cleanup Program Tax Credits<sup>70</sup> provide funding for cleanup and redevelopment and the BOAP<sup>71</sup> provides funds for municipalities and community organizations to engage in the brownfields process; and
- At the local level funding is made available through the DEQ's Brownfields Assistance Program (BAP),<sup>72</sup> the Community Brownfields Assistance Program (CBAP)<sup>73</sup> and a Cleanup Revolving Loan Fund.

## **Community Involvement**

Rochester has sought to enhance opportunities for community residents to engage in the brownfields process on a pro-active rather than a reactive level. As noted, DNBD works with community-based organizations with respect to brownfields assessment and redevelopment. In addition to this and other traditional means of community involvement (such as public meetings), more innovative methods include:

- The Community Brownfields Assistance Program (CBAP) which now allows community based organizations (CBOs) greater access to the brownfields process;
- The Brownfields Opportunity Area Program (BOAP) which provides resources for community groups and residents to engage in environmental activities; and
- The City's role in helping community groups awarded BOAP grants.

The DEQ believes that the new CBAP is a pro-active approach to strengthen community involvement in brownfields (Gregor, 2013). This expansion of the BAP waives assessment service fees for CBOs, thereby encouraging their participation.<sup>74</sup> The City also assists CBOs that have been awarded NYS BOAP grants. For example, the City helped Group 14621, a community association representing the 14621 area zip code, which was awarded a NYS BOAP grant in 2012. These funds enabled the organization to identify and nominate a 757 acre site near the Genesee River for brownfields redevelopment. While the city provided some technical

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<sup>70</sup> Site preparation and on site groundwater remediation qualify for tax credits covering remediation and a host of other capital costs required to make the site usable for redevelopment. Property tax credit is also available for redevelopment projects which conform to the goals and priorities of the Brownfield Opportunity Area.

<sup>71</sup> The BOAP provides financial assistance to these groups which covers up to 90% of costs for many things, including: community visioning; public participation; site inventory; site assessments; feasibility analysis; conceptual design; design standards; zoning revisions; and site marketing (New York Department of State, n.d.).

<sup>72</sup> The BAP provides site assessment services to businesses, developers and non-profit housing interests who meet city economic development or housing objectives. Applicants must pay back 1/3 of the assessment costs if they proceed with acquisition and redevelopment (City of Rochester, 2010).

<sup>73</sup> The CBAP expands the program to community-based organizations and does not require the service fee.

<sup>74</sup> CBOs that have agreed to participate include Group 14621, Charlotte Community Association, Southwest Common Council and the Sector 4 Community Development Corporation (City of Rochester, 2010).

assistance for this project to the community, community representatives thought that more workshops would have been beneficial. (Moses, 2013)

### **Economic Aspects**

Beginning in 2001, Rochester began to track selected aggregate economic benefits that have come from brownfields redevelopment efforts within the City. From 2001 through 2010 the City's Brownfields Program has been beneficial in terms of private investment, job retention and creation, and in improving property values. During this time, brownfields assessment, remediation and redevelopment helped leverage approximately \$438.5 million in private investment. Brownfields activities and redevelopment uses also resulted in the retention of 1,083 jobs and the creation of 382 new jobs. Additionally, the brownfields projects sites increased their aggregate property values by \$30 million (City of Rochester, 2010).

The City's economic indicators, although informative for noting economic benefits, could be more detailed if it included information with regards increases in property tax revenue, sales revenue, and the distribution of jobs retained and created. Rochester's 2010 assessment grant proposal for federal funding from the EPA, includes plans to begin tracking more economic indicators such as private sector investment, property value changes near projects, other sources of leveraged financial investments and service fee payments to the City.

### **Environmental Aspects**

The City also began tracking brownfields activities that are associated with the Brownfields Assistance Program. From 2001 to 2010 Rochester's BAP completed 49 assessments at 32 different sites. Overall, this resulted in a total area of 66 assessed acres. Moreover, about 55% of these projects have proceeded or are proceeding with cleanup and redevelopment activities (City of Rochester, 2010). These figures are problematic in two ways. First, they do not take into consideration site assessments, cleanup activities and redevelopment that take place at properties not included in the City's BAP. Second, the number of assessments and remediation and redevelopment activities taking places are very small compared to the overall number of potential brownfields properties and acres which exist in the City.<sup>75</sup>

Rochester has sought to integrate broader environmental goals into its brownfields efforts through the City's vacant property initiative titled "Project Green." The City believes that half of the sites that will be assessed under the innovative CBAP will become part of its city-wide interconnected green infrastructure plan. Project Green plans to encourage the demolition of vacant structures/remediation of brownfields to promote the greening of communities with green

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<sup>75</sup> The City estimates that almost 4,000 properties contain potential environmental issues and that more than 3,000 acres of land still need to be assessed (City of Rochester, 2010).

stormwater infrastructure, wildlife habitat restoration and community gardens (City of Rochester, 2009). In 2010, the City's assessment proposal discussed the acquisition of 110 acres of vacant property over the next five years to convert to green infrastructure (City of Rochester, 2010).

## **Social Aspects**

Rochester has attempted to address the social aspects of brownfields redevelopment by putting in place the CBAP. The goal of the CBAP is to promote a diverse range of reuse options centered on quality of life benefits to residents. Rochester has redeveloped sites into: parks, low-income housing and other socially beneficial uses. In addition, the City is concerned with the mitigation of public health risks. This is evident in the city's willingness to shoulder risks and waive site assessment fees in the absence of redevelopment (Gregor, 2013). Overall, however, Rochester's plan has not made any effort to track overall reuse options.

For example, with respect to housing, efforts at reducing gentrification have become a focal point of the city's area-wide planning efforts (Gregor, 2013). Rochester has encouraged agreements between private parties and communities which have led to the development of mixed income housing and minimal displacement of community residents at redeveloped properties (Moses, 2013; Gregor, 2013). The City could not provide numbers to support these claims. With respect to promoting employment, the NYS BOAP funded grants support the employment of neighborhood residents in area-wide brownfields identification, planning and research (Moses, 2013). Brownfields cleanup and redevelopment have also led to the retention and creation of almost 1,500 jobs. Again, no numbers exist that show how job retention/creation have benefitted community residents.

## **Access and Transparency**

The city of Rochester has done an exemplary job of providing access and transparency with regards to brownfields in the City. The DEQ leads the way by providing a centralized webpage with general information about the City's brownfield program, including current and past projects and financial resources for both development and community interests.<sup>76</sup> It also includes direct contact information for the brownfields program (in the form of the Brownfields Coordinator position) links to state and federal brownfield resources. Although the DEQ does not provide site specific data the link to the State fulfills that need.

Site specific data is managed by the State's Department of Environmental Conservation (NYSDEC), which provides a publically available database which also provides information on spills, remedial program sites, and bulk storage facilities. The database is searchable by region,

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<sup>76</sup> Rochester's brownfields program website is available via the DEQ at:  
<http://www.cityofrochester.gov/article.aspx?id=8589936747>

City and even by exact address so that community members can easily discover information about nearby sites.<sup>77</sup> Extensive site information is provided within the system, including site history, types of contaminants, levels of contamination, and overall environmental assessments and site health assessments.

### **Lessons for Delaware**

- The use of innovative means such as the Community Brownfields Assistance Program to encourage community involvement;
- The inclusion of brownfields remediation and re-use into broader environmental goals such as a city-wide green infrastructure plan;
- The value of systematically tracking the environmental and social aspects of brownfields efforts to ensure program success; and
- The need to address gentrification issues as a part of redevelopment.

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<sup>77</sup> The state brownfield database Which is maintained by NYSDEC is available at:  
<http://www.dec.ny.gov/cfm/xtapps/derexternal/index.cfm?pageid=3>

## I. Salt Lake City, UT

Salt Lake City, UT established its brownfields program in 1997. Since then it has received a number of federal grants to assist in its brownfields efforts for assessment, cleanup, to help establish a brownfields revolving loan fund and for jobs training. In 1998 Salt Lake City was designated an EPA Brownfields Showcase community. As a result of its brownfields efforts the City has successfully leveraged more than \$2.8 million in EPA brownfields- related grant funding and \$380 million in private funding.

### **Background**

Brownfield efforts in Salt Lake City have focused on an area known as the “Gateway” district. This 650 acre district was initially developed during the 19<sup>th</sup> century as a central mining and railroad corridor. The area saw a boom of railroad-related facilities, followed by manufacturing, heavy industry, salvage yards and warehouses. The addition of an interstate highway and shifting land uses have resulted in an increasing number of vacant properties, characterized by environmental contamination. According to the EPA, over 50% of the properties in the Gateway district contain some form of contamination (EPA, 2003).

The greater Salt Lake City metro area has a population of roughly 1.1 million people and is one of the most rapidly growing areas of the nation. Salt Lake City itself is home to about 190,000 residents and has larger percentage of minorities compared to Utah as a whole.<sup>78</sup> In addition, 17.9% of City residents live below the poverty level compared to 11.4% for the State and 14.3% for the Nation as a whole. Residents of the City’s Gateway district were plagued by high crime and high levels of poverty. The City identified the blighted industrial Gateway district for revitalization with a goal of creating livable mixed-use neighborhoods.

### **Leadership and Coordination**

Brownfields efforts in Salt Lake City have been initiated and coordinated by the Salt Lake City Redevelopment Agency (RDA) and the Salt Lake City Planning Commission. The RDA<sup>79</sup> takes an area-wide approach to brownfields by identifying “Urban Renewal Areas.” Parcels within these areas are inspected for potential contamination in consultation with community members and based on their site history. Assessments are conducted with contractors which identify properties most at risk for environmental problems and the RDA determines what sites are most in need of brownfields site assistance (Wilkerson-Smith, 2013).

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<sup>78</sup> According to the 2010 Census, Salt Lake City has 34% minority residents (with about 23% Hispanic and 3% Black) compared to 20% for the state as a whole (with 13% Hispanic and 1% Black).

<sup>79</sup> The RDA is tasked with eliminating blight, developing low and moderate income housing and to encourage compliance with the City’s Master Plan.

RDA works closely with the Planning Commission to ensure redevelopment options comply with the City’s “Master Plan” which incorporates community visions and needs. The Planning Commission reviews redevelopment options, approves or denies development permits, rezoning options, conditional use permits, remediation design and final use design. To ensure redevelopment aligns with the community’s vision, public workshops are held with property owners, stakeholders, and community councils in order to craft the Master Plan. Through these workshops and follow up meetings Salt Lake City develops project plans that are compatible with the community needs (Salt Lake City, 2011).

Coordination with other agencies has played a critical role in the success of the Salt Lake City brownfields program. Additional groups that have contributed to the program are:

- Wasatch Front Regional Council (WFRC);
- Wasatch Front Brownfields Coalition (WFBC);
- Utah Transit Authority; and
- Utah Department of Environmental Quality (DEQ).

The WFRC includes local community groups and seeks to re-use brownfields as an alternative to urban sprawl.<sup>80</sup> The WFBC pools resources across counties to leverage brownfields opportunities.<sup>81</sup> The Utah DEQ has final approval of brownfields redevelopment design based on exposure risks and cleanup measures (Envision Utah, 2006). According to the DEQ, the strength of Salt Lake City’s brownfields program has been its ability to coordinate with the state and leverage local and regional stakeholders to pursue brownfields redevelopment as part of overall sustainable community development (Rees, 2013). Much of brownfields efforts in the Salt Lake City can be attributed to plans to pursue alternative transit options along with light rail expansion and the pursuit of smart growth patterns. Coordinating with the state in transportation options helped the City identify and redevelop brownfields that were otherwise considered unusable because of location, transit options and potential contamination.

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<sup>80</sup> The WFRC is composed of local governments and community members in Salt Lake, Davis, Weber, Tooele and Morgan Counties in Utah. It develops regional plans and tools to better coordinate growth and development in the region. “The Wasatch Choice for 2040” maps out desirable transportation patterns and development that reduces consumption of open spaces and suburban sprawl patterns by promoting incentives for brownfield and infill redevelopment practices. The plan is available at: [http://wfr.org/cms/index.php?option=com\\_content&view](http://wfr.org/cms/index.php?option=com_content&view)

<sup>81</sup> The WFBC is composed of Salt Lake City, Ogden City and Salt Lake County officials. It pools resources to lead to more successful grant and resource opportunities.

## **Funding Mechanisms**

Numerous funding mechanisms and other incentives exist to encourage brownfields remediation and redevelopment in Salt Lake City:

- At the federal level, the City and County have leveraged over \$2.8 million in EPA grant funding for assessment and cleanup, jobs training and establishing a BRLF;
- At the state level, the State of Utah also provides incentives for redevelopment with a Voluntary Cleanup Program<sup>82</sup> and the Enforceable Written Assurances (EWA)<sup>83</sup>; and
- At the local level, Environmental Assessment and Remediation Loan are available through the Salt Lake City RDA.<sup>84</sup> The municipality can also utilize tax increment financing to fund public infrastructure to better spur private redevelopment on brownfields (Envision Utah, 2006).

## **Community Involvement**

To ensure community engagement the Wasatch Front Brownfield Coalition and Salt Lake City have established mechanisms to reach the public at large as well as more directly engage specific populations near sites involved in brownfield redevelopment. In addition to holding public meeting to inform and educate the public, other methods include:

- Posting meeting fliers and brownfield facts sheets in both English and Spanish at targeted properties;
- Notifying key stakeholders across multiple media including website postings, direct mailings and email;
- Providing regular updates through follow up meetings, emails, webinars, and social media; and
- Signage on properties undergoing cleanup inform the public about activities occurring on the site, timeframe and expected outcomes (Salt Lake City, 2011).

According to RDA Special Projects Manager Ms. Wilkerson-Smith, one-on-one meetings with affected property owners have become the most effective meaning of communication. However, gaining cooperation of property owners in conducting assessments and engaging portions of the community not directly affected by redevelopment process can be improved.

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<sup>82</sup> The VCP provides liability relief for current and future owners of properties with suspected contamination.

<sup>83</sup> The EWA provides written assurance that the DEQ will not bring enforcement actions to a brownfield prospective purchaser (BFPP) for contamination on site if they agree to a number of provisions (Envision Utah, 2006).

<sup>84</sup> The loan is available for private brownfield redevelopment within redevelopment corridors for up to 50% of the site assessment, remediation, monitoring and cleanup cost. The loan requires the property owner to conform to the neighborhood Master Plan (redevelopment Agency of Salt Lake City, 2012).



Key community-based organizations involved in community engagement vary depending on project sites but typically include the Wasatch Front Sustainable Communities Consortium and Envision Utah, among others. Envision Utah is a statewide public-private partnership that seeks to invite broad community participation in redevelopment. Overall, it has conducted more than 200 redevelopment workshops in the state with over 20,000 participants to voice their opinion for “Quality Growth.” Envision Utah also builds relationships with local community organizations such as Neighborworks Salt Lake to build inclusive area-wide planning processes. (Oostema, 2013) Salt Lake City Corporation also provides funding to some groups to facilitate community participation (Neighborworks Salt Lake, 2013).

### **Economic Aspects**

Salt Lake City’s has done well in both aggregate economic accomplishments and in tracking overall economic benefits of brownfields efforts. The high degree of coordination among the RDA and Planning Commission with other actors has successfully leveraged over \$380 million in private investment to redevelop brownfield properties. The use of tax increment financing in the districts generated \$75 million to support infrastructure renewal (Salt Lake City, 2011). Brownfields redeveloped areas currently generate \$3 million additional dollars in annual sales tax revenue and \$9.7 million in additional annual property taxes. Redevelopment activity has also been attributed to the creation of at least 3,600 jobs. Unfortunately, no direct mechanism exists to direct these economic and benefits (additional tax revenue and employment opportunities) to the affected communities and their residents. The city anticipates additional impacts from its 2012 Assessment Grant, however, it is too early in the project process to produce economic or job data (Wilkerson-Smith, 2013).

### **Environmental Aspects**

While aggregate economic impacts of Salt Lake City’s brownfield redevelopment are impressive, less information is available about city-wide environmental measurements. Information on cleanup activities related to specific, individual sites document contaminants of concern and general remedial activities. However, no aggregate metrics exist on the number of sites that have been assessed or acres that have been remediated. The lack of measurements to document environmental accomplishments is a weakness to promoting overall sustainable community development.

Brownfields redevelopment in the Gateway district was used to spur a potential stream daylighting project.<sup>85</sup> City Creek flows through three RDA project areas, and brownfield projects in the Gateway area ignited the RDA’s involvement. One third of the proposed daylighting of City Creek occurred within the Pilot area, allowing the use of brownfields grant

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<sup>85</sup> “Daylighting,” refers to the process of restoring a stream that was previously covered.

money to fund portions of environmental and hydrological studies. By 2003 the City Creek Daylighting Project was selected as an EPA's Urban Rivers Restoration Initiative Pilot Program. The plan was to "restore an aquatic use in the area, provide native plant and animal habitat and provide recreation opportunities that do not now exist in an area the shows severe signs of blight" (Love, 2005). Due to existing infrastructure and hydrological conditions, sections of the creek may never be daylighted, however, the RDA intends to assess areas along the City Creek Corridor as part of a recently awarded area-wide assessment grant (Wilkerson-Smith, 2013).

## **Social Aspects**

Although Utah, the County and Salt Lake City have stressed smart growth principles and overall sustainable community development, little has been documented in regards to the social benefits of the City's brownfields program. It is important to note that coordination has taken place between Salt Lake City, regional planners, and the Utah Transit Authority to match brownfields redevelopment with improving transportation options in the area. This has spurred sustainable transit-oriented development planning within redevelopment corridors (Rees, 2013). Limited efforts have been made, however, to systematically document these benefits as well as other non-economic accomplishments of brownfields efforts.

Among the benefits that have been noted within the City are 40 acre of mixed-use development that contains 350 apartment units and 150 condos in addition to office and retail space; 4 blocks of abandoned railroad tracks redeveloped for sewer/water infrastructure and public green space; intermodal transportation hub that accommodates bus, train, light rail and commuter rail transit; and two condominium projects that provide 217 low income housing units (Wilkerson-Smith, 2013).

## **Access and Transparency**

Currently, the most consolidated source of information for the general public is available through the Utah DEQ. The DEQ maintains a GIS database of all brownfield projects which includes sites with VCPs and EWAs.<sup>86</sup> The information is publicly available online through an online GIS viewer, or as a downloadable GIS geo-database file.

Unfortunately, basic information regarding Salt Lake City's brownfield efforts is not available through the City's website. Improvements could be made in this regard just by providing a city webpage with this content as well as current brownfield activities and a point of contact. In recognition of this deficiency, one of the key objectives identified by the City, in its 2011 Assessment Grant Application, is to produce an Environmental Conditions Inventory and

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<sup>86</sup> This is available at <http://gis.utah.gov/data/environment/deq-land-related-contaminant-cleanup-sites/>.

interactive GIS database throughout the assessment corridor. This could centralize information among multiple, scattered sources and play a significant role in: identifying high priority cleanup sites, developing remediation plans, clarifying environmental issues associated with medium or low priority sites and highlight areas with insufficient data. The interactive database will allow the city, RDA and community to identify locations of contamination as well as type and extent of contamination.

### **Lessons for Delaware**

- The importance of effective regional and interagency cooperation in identifying and coordinating brownfield redevelopment opportunities and community visions;
- The need for developing common regional goals and visions to maximize resources and leverage funding in brownfields areas;
- Identifying brownfields as a component of sustainable community and transit-oriented redevelopment; and
- How to simultaneously address brownfields redevelopment and environmental/water issues simultaneously.

## **J. Trenton, NJ**

The City of Trenton, NJ has long been considered a national leader in brownfields remediation and redevelopment. Since 1995 it has been awarded more than ten grants from the EPA totaling almost \$5 million dollars to aid in assessment and cleanup activities and to establish a revolving loan fund. The most recent award came in 2011, when it was awarded \$1 million dollars to aid in assessment and cleanup activities related to hazardous substances and petroleum. Overall, the Trenton Brownfields Program has leveraged over \$35 million dollars in funding, and received 6 Phoenix Awards for excellence in brownfields development.

### **Background**

Trenton's long industrial history has led to significant legacy pollution and brownfields issues within the City. Potteries, rubber and tire factories, and coal yards have all contributed to soil and groundwater pollution within the City. There are currently over 150 brownfields properties within Trenton that both expose its residents to potential health risks and reduce their economic opportunities. The city of Trenton describes its vacant/underutilized brownfield sites as contributing "negative synergy of disinvestment causing those that can afford to relocate to flee from the community, resulting in a shrinking tax base and a disappearance of quality goods, services and employment opportunities as businesses depart" (City of Trenton, 2010).

The situation in Trenton underscores the need for environmental justice as a focus in remediation and revitalization. According to the 2010 U.S Census, among the City's population of approximately 85,000 residents, 51.4% are African American and 32.9% are Hispanic. Almost 23% of Trenton's residents live below the poverty level and that number rises to 44.4% percent for female-headed households with children under 5 years of age. The City government also notes a high foreclosure rate, with nearly 44% of families considered housing-burdened (more than 30% of their income goes towards mortgages).

### **Leadership and Coordination**

Trenton's Brownfields Program is run out of the City's Department of Housing and Economic Development (DHED). The mission of the program is to first investigate sites and then facilitate the process of remediation in order to make sites available for redevelopment. Continued support from different administrations over the years have helped to promote the program and brought attention to its success at the national level.

Brownfields remediation and redevelopment are seen as critical components to improving the quality of life for residents in Trenton and overall economic development within the City. In addition to the DHED, the following actors have played crucial roles in the program.

- Dedicated Brownfields Coordinator;
- Better Environmental Solutions for Trenton (BEST) Advisory Council;
- State of New Jersey; and
- Mercer County.

When Trenton began its Brownfields Initiatives it established two cornerstones of leadership that continue to guide the program today. The first was the creation of a dedicated Brownfields Program Coordinator position within the DHED in 1998. In most cases, brownfields issues are often assigned as one of numerous responsibilities among state and city staff. Trenton is one of the few municipalities with a population under 100,000 with a dedicated Brownfields Coordinator. This highlights the high level of commitment and support the City's administration has for the Program. Those involved in the brownfields process note the significance of this position in facilitating coordination among different entities and in securing funding opportunities. Moreover, the position has provided historical continuity and expertise.

The BEST Advisory Council, established in 1996, serves as the other cornerstone. The Council, which is composed of a diverse mix of government officials, attorneys, realtors, developers, community representatives, engineers, lenders and scholars, provides both advice for decision-making and assistance on individual brownfields remediation and redevelopment and legislative issues.<sup>87</sup> BEST provides input towards maintaining a successful Brownfields Program through ongoing "Brownfields Program Action Plans". These Plans are noteworthy in that they establish recommendations and goals that are essential to continued remediation and revitalization success. They also provide a means to monitor progress and accomplishments.

In addition, both the state and county play important roles. The state of New Jersey has provided numerous sources of funding related to brownfields assessment, cleanup and revitalization. The Mercer County government has also worked to support urban redevelopment versus greenfields development. The County's Open Space Preservation Trust Fund has helped fund greenspace projects in Trenton. The Mercer County Planning Division has also provided technical and financial support with respect to Geographic Information Systems (GIS).

### **Funding Mechanisms**

Trenton's Brownfields Program has been particularly successful in leveraging funds for assessment, cleanup and redevelopment activities. Currently it has leveraged over \$35 million dollars to aid in its Brownfields Initiatives. This has more than offset the cost of the Brownfields

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<sup>87</sup> BEST is administered by Brownfields Redevelopment Solutions (BRS). BEST members include representatives from, among others, NJDCA Office of Smart Growth, NJDEP, NJ Redevelopment Authority, USEPA, Mercer County Division of Planning, NCIA, Plan Smart NJ, Isles Inc., Rutgers University, New Jersey Future and the City of Trenton.

Coordinator position. Those involved with the program also note the role of a private lobbying firm with state and federal ties as having a positive impact in receiving earmarked funding.

Several funding mechanisms exist for developers and the city:

- At the federal level, Trenton has received numerous grants from the EPA for assessment and remediation activities. In addition, it has used the Brownfields Expensing Tax Credit (BETC);<sup>88</sup>
- At the state level, Trenton has used New Jersey's Brownfields Reimbursement Program (BRP),<sup>89</sup> the Hazardous Discharge Site Remediation Fund (HDSRF),<sup>90</sup> and the Environmental Equity Program (E<sup>2</sup>P)<sup>91</sup> to help facilitate assessment, cleanup and redevelopment activities; and
- At the city level, Trenton has relied on its own Brownfields Revolving Fund which was originally capitalized via the EPA's Brownfields Cleanup Revolving Loan Fund (BCRLF) grant which was awarded in 1997 for \$1 million dollars.

## **Community Involvement**

The City of Trenton believes that long-term success in the brownfields process requires active community involvement. Isles Inc., a nonprofit community development and environmental organization founded in 1981, was originally tasked with the job of enhancing community participation when Trenton received its first award from the EPA in 1995. Initially, both Isles Inc. and the City identified the lack of organizational skills among community residents as an obstacle to community development. The City partnered with the New Jersey Institute of Technology and Rutgers to create a course to help residents build their capacity to address brownfields issues. In addition, the City has provided opportunities to educate residents with respect to remediation and redevelopment of specific sites (such as the Magic Marker site).

The BEST Advisory Council, as previously noted, is the main instrument that links different groups to actively promote participation within Trenton's brownfields efforts. DHED representatives attend BEST meetings which are held quarterly (formerly monthly) and communicate the technical aspects and current status of remediation and redevelopment projects.

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<sup>88</sup> The BETC allows developers to deduct cleanup costs at eligible properties. It's designed to balance the costs involved in redeveloping a blighted property as opposed to developing a pristine greenfield site.

<sup>89</sup> THE BRP is administered by the NJ Economic Development Authority (NJEDA). It provides remediation costs for developers for environmental cleanup related to sites that will generate state tax revenue.

<sup>90</sup> The HDSRF is administered by the NJ Department of Environmental Protection (NJDEP) and the NJEDA. It provides grants and loans to municipalities for site assessment and to businesses and individuals for remediation.

<sup>91</sup> E<sup>2</sup>P funds are administered by the NJ Redevelopment Authority. It provides funds in the early stages of brownfields redevelopment to advance smart growth efforts.

What makes the BEST Advisory Council exemplary is its commitment to a truly representative Council and its influence on the brownfields decision-making process (Pivnick, 2012).

With respect to the Council's makeup:

- BEST Advisory Council members are periodically reviewed to determine if particular sectors and interests within the community are adequately represented;
- Efforts are made to reach out to underrepresented groups, particularly those that represent the impacted communities; and
- Educational programs have been established to increase the capacity of community residents to engage in the brownfields process.

With respect to the Council's influence:

- BEST produces *The Brownfields Action Plan* periodically (the last report came out in 2010) which provides updates on brownfields activities and recommendations for continued success;
- In the case of conflicting viewpoints of specific issues, the Council works through the conflicts and meetings and decides how best to move forward given resources and political realities (Yasenchak, 2012); and
- Although the Council serves in an advisory capacity, representatives of community groups vouch for the sincerity on the part of the City in involving their opinions in the decision-making process (Pivnick, 2012).

## **Economic Aspects**

Despite the national acclaim Trenton's Brownfields Program has achieved, little is known regarding its overall economic accomplishments. The BEST Advisory Council claims that sites developed up to 2005 contributed over \$2 million dollars in annual tax revenue in 2005. No further numbers are provided. In addition, while individual redevelopment sites have been lauded for their job creation (for example, the Hutchison sites have created hundreds of jobs) no aggregate numbers exist. According to the Brownfields Coordinator, a combination of lack of resources and the difficulty in tracking economic benefit over time limits the ability to collect data on actual tax benefit and job creation of redevelopment projects (Capasso, 2012). BEST has recommended that enhanced efforts are needed in terms of measuring program success.<sup>92</sup>

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<sup>92</sup> "Development of a comprehensive, city-wide case analysis of the social, environmental, and economic benefits of Trenton's brownfields development to date will provide a more complete understanding of the overall contribution of the program" (BEST, 2010).

## **Environmental Aspects**

Trenton has been successful with respect to environmental measurements. As of 2010, out of 134 identified brownfields sites within the City, nearly 100 had been assessed and more than 60 had been remediated and redeveloped. Overall, out of the approximately 4,800 acres that comprise Trenton, about 138.8 acres (2%) had been cleaned up with an additional 160 acres under different stages of assessment, remediation and or development (BEST, 2010).<sup>93</sup> Brownfields properties have been remediated in every Ward in Trenton. In addition, the City has been successful in identifying “future brownfields” properties.

Although the Delaware River runs through Trenton, the movement of pollutants from land to water via flooding is not explicitly considered within the Brownfield Program. However, if contamination from a site poses a known risk to a drinking water source, cleanup is given priority. For example, a 2005 EPA Cleanup grant was used to remediate the Pukala property from volatile organics and lead which washed into the Delaware River (Capasso, 2012).

## **Social Aspects**

To date, Trenton has been largely successful with regards to the social aspects of brownfields redevelopment. This is in keeping with the City of Trenton’s commitment to “a balance of redevelopment uses (BEST, 2010). Trenton has numerous detailed examples of redeveloped sites that go beyond economics in an attempt to promote sustainable communities. Efforts have also been made to measure this outcome by tracking redevelopment uses. As of 2010, brownfield redevelopment activities had resulted in 30 sites for commercial/retail usage, 10 sites for housing creation, 9 sites for industrial activities, 7 public use sites and 4 sites for recreational/open space areas. In addition, while gentrification has not been specifically looked into, those involved with the brownfields program have identified it as a non-issue.

## **Access and Transparency**

The BEST Advisory Council provides information on Trenton’s brownfields activities via its Brownfields Program Action Plans. A number of websites and links from the State offer detailed information with respect to individual sites. The New Jersey Site Remediation Program maintains a database of brownfields locations. New Jersey’s GIS Portal and the State’s Department of Environmental Protection make information on contaminants and site status available. Market-ready brownfields are posted on the New Jersey Brownfields Site Mart.<sup>94</sup> At

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<sup>93</sup> According to Brownfields Coordinator Capasso, 240 acres have currently been remediated (Capasso 2012).

<sup>94</sup> The NJSRP is at [www.nj.gov/dep/srp/kcsnj/](http://www.nj.gov/dep/srp/kcsnj/). The NGIS Portal is at [www.nj.gov/dep/gis/geoweb splash.htm](http://www.nj.gov/dep/gis/geoweb splash.htm). The DEP Data Miner is at [www.nj.gov/dep/gis/geoweb splash.htm](http://www.nj.gov/dep/gis/geoweb splash.htm). The NJBSM is at <http://www.njbrownfields.com>



the City level, Trenton maintains its own brownfields database in an excel spreadsheet which is not currently linked to a GIS system.

Overall, Trenton's efforts with regards to access and transparency have exhibited good intentions but there is significant room for improvement. The City has not used available technology to its best effect and as a result there is a lack of basic information with regards to brownfields activities. For example, BEST's Action Plans are not available online. BEST has recommended that Trenton's Brownfields Program needs its own website—as part of the City's website or standing on its own. This would provide a valuable resource for community residents, development interests and others.

### **Lessons for Delaware**

- The important role a dedicated brownfields program coordinator can play in the overall success of remediation and redevelopment activities;
- The value of educating community residents to participate in and providing continuous opportunities for their input in the brownfields process;
- The essential role a truly representative and influential advisory council can play in successful brownfields activities; and
- The need for balanced redevelopment uses as an integral part of building sustainable communities.



## **IV. Legacy Pollution and Brownfields in Delaware**

This section examines legacy pollution and brownfields in Delaware, focusing on the City of Wilmington. It recognizes the confluence of economic, environmental and social factors by examining economic development in Wilmington, the resulting proliferation of legacy pollutants, urban abandonment and social segregation in the City, and the overall state of brownfields within Delaware. The section concludes with a detailed socioeconomic analysis of brownfields within Wilmington, using census information to examine the socioeconomic indicators of residents living in brownfield areas and comparing them to City residents as a whole, New Castle County residents and the State of Delaware residents. Analysis reveals that environmental justice, community participation, and sustainable development are appropriate parameters by which to examine brownfields efforts in Wilmington.

### **A. Economic Development in Wilmington**

Wilmington's industrial legacy began in the early 1800s when DuPont Chemical Company began manufacturing gunpowder on the banks of the Brandywine Creek in 1802 (DuPont, 2013). Ship, carriage and railcar construction flourished, as did tanneries and foundries, especially along the banks of the Brandywine and Christina Rivers (Amuti, 2001). By late 1860s, bolstered by a war economy, Wilmington became a national center for the production of iron ships, carriages, gunpowder and leather (City of Wilmington, 2013b). Chemical and industrial manufacturing continued to expand, particularly during the First and Second World Wars, when wartime demand kept factories running night and day. Between 1920 and 1950, the City supported an average of more than 110,000 residents (City of Wilmington, 2013b; U.S. Census Bureau, 2013).

The boom economy of the 1940s and early 1950s marked the height of Wilmington's industrial development. Soon after, the city began a gradual shift from an industrial to a service economy (City of Wilmington, 2005; CEEP, 1999). By the 1960s the costs of rapid industrial development were becoming obvious in Delaware and across the country. Over the next two decades, the federal government passed a series of laws designed to monitor polluting industries (Greenberg , 2007). In an effort to circumvent costly regulation, many industries outsourced production to countries with lax oversight and inexpensive labor forces, leaving behind a number of abandoned properties. Due to fears of contamination, many of these properties remained vacant or underutilized.

In an effort to revitalize its economy, Delaware adopted a redevelopment strategy in the early 1980s to make the State more attractive to investors. The State passed a series of corporate-friendly tax laws, beginning with the Financial Center Development Act of 1981 (City of Wilmington, 2013b). These changes allow out-of-state companies to transfer assets to holding

companies based. This can result in a reduction of the parent company's out-of-state (and overall) tax bill (Dyreg, 2013). As a result of this legislation, Delaware has profited through the collection of corporate franchise fees (Wayne, 2012).

The legislation has been an effective magnet for corporate investment, particularly in Wilmington, which considers itself the "corporate capital of the world" (City of Wilmington, 2013a). Sixty percent of U.S. firms and fifty-eight percent of subsidiary shell corporations are now based in Delaware due to its function as a legal host of corporate headquarters (Dyreg, 2013). More than half of all Fortune 500 companies have established offices in Wilmington (City of Wilmington, 2013a). Despite substantial investment and redevelopment in central Wilmington, revitalization for communities has lagged, and the City's overall poverty rate has continued to increase (City of Wilmington, 2005; U.S. Census Bureau, 2010d, 2013b).

## **B. Wilmington's Pollutants Legacy and Brownfields**

The appearance of Wilmington's brownfields can be traced to the early 1800s, when industrial expansion began in earnest. Chemical production, tannery and foundry work, and manufacturing left a legacy of long-lived waste. Heavy metals, polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), petroleum products, and a number of uncharacterized compounds now permeate much of Wilmington's soil and groundwater, particularly in South and East Wilmington (CEEP, 2003).

Heavy metals, including arsenic and lead, are commonly found in Wilmington's brownfields. Arsenic, a potent metabolic inhibitor, occurs naturally in Delaware's soils but is found at elevated concentrations at abandoned foundry and tannery sites. It was also used historically as both a pesticide and wood preservative. Lead, a powerful neurotoxin, was widely employed to create paint pigments, fuel additives and pesticides (DNREC-SIRS, 2013a; ATSDR, 2013).

PCBs and PAHs<sup>95</sup> are hydrophobic compounds which cling to soil and can persist for decades, if not centuries. Direct contact with PCBs can result in rashes and sores, while ingestion can cause organ damage, immune system suppression and impaired development, especially in children. While no longer produced in the United States, PCBs were historically used as coolants and insulators, primarily in electrical equipment. Several PAHs are known carcinogens, and prenatal exposure has been linked to birth defects, asthma and depressed IQ scores in children. Both PCBs and PAHs accumulate in living tissue over time, increasing the cumulative health risk to those living in close proximity to contaminated sites (DNREC-SIRS, 2013a; ATSDR, 2013).

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<sup>95</sup> PCBs are man-made aromatic chlorinated compounds with neurotoxic, mutagenic and endocrine disruptive properties. PAHs, multi-ringed aromatic compounds, are formed through the combustion of fossil fuels, garbage and other organic materials.

Petroleum contains a mixture of aliphatic and aromatic organic compounds, many of which are carcinogenic. Soil and groundwater contamination typically results from spills or leaking underground storage tanks. Petroleum products can be persistent and highly volatile. They may be vented from contaminated soil, fouling local air quality (DNREC-SIRS, 2013a; ATSDR, 2013). In addition to these common pollutants, most sites contain organic compounds that remain uncharacterized. While the concentration of these substances is usually low, the potential health and environmental effects of these substances remains unknown (DEN, 2013).

Historical evidence suggests that industrial waste, often enriched with these legacy pollutants, was dumped directly into the City's rivers and marshlands (DNREC, 2009). Furthermore, as the need for land increased over time, incinerator ash, slag and municipal waste were often used as infill for land reclamation (HAC, 2013a). Currently, the Christina and Brandywine rivers are both classified as impaired by the EPA (EPA, My WATERS Mapper, 2013). In addition, the City's remaining wetlands are dotted with hotspots with elevated levels of arsenic, lead, chromium, PAHs and PCBs (Brightfields Inc., 2009).

The land/water nexus is also a significant source of risk with regard to brownfields. Flooding and runoff can mobilize exposed brownfield topsoil, carrying it onto adjacent properties and water bodies. A significant number of brownfields sites in East and South Wilmington lie within the 100-year flood plain (DNREC, 2009). Natural flooding in these areas has been exacerbated by an inadequate drainage system, particularly in South Wilmington, where an average of 32 combined-sewer overflow events occurs each year (Works, 2006). This flooding frequently overruns brownfield properties, washing debris into the surrounding community, including into the basements of residential homes (SBCA, 2013a).

### **C. Urban Decline and Social Segregation**

Wilmington lies at the confluence of the Christina and Brandywine rivers, straddling the fall line between two geographically distinct areas: the hilly piedmont to the north and the flat coastal plain to the south. Suburban expansion in Wilmington began soon after the onset of industrial development. Wealthy residents migrated north of the urbanizing coastal plain (City of Wilmington, 2013b). This exodus led to the development of a socioeconomic fall line with wealthier residents in North and Northwest Wilmington, while poor and working-class residents remained in South and East Wilmington.

Between 1860 and 1940, both urban and suburban population expanded in Delaware. Wilmington's population grew fivefold, from roughly 20,000 in 1860 to more than 112,000 in 1940. Industrial production and population peaked soon after. Beginning in the 1950s,

Wilmington's population began to fall as suburban migration out of the City increased. By 1980, Wilmington's population had fallen to just over 70,000 (City of Wilmington, 2013b).

More than one factor contributed to Wilmington's urban decline: suburban migration, the gradual shift from an industrial to a service economy, the translocation of manufacturing to developing nations, and increasing urban blight. Interstate highway construction during the 1960s exacerbated this trend, slicing through the heart of Wilmington, and dividing some of Wilmington's oldest neighborhoods. Together, these events led to an increase in the number of abandoned and potentially contaminated properties in the City. The City found itself in a difficult position—as its tax base shrank it was forced to spend money on infrastructure leaving fewer resources to deal with urban decay. As a consequence, blight increased, property values fell and home ownership declined (CEEP, 1999; City of Wilmington, 2005; WUDAGC, 2012).

As the quality of life in some Wilmington neighborhoods deteriorated, those with resources left for the expansion areas and the suburbs. Poverty, unemployment, environmental risk, and crime became persistent threats to certain neighborhoods in the City.

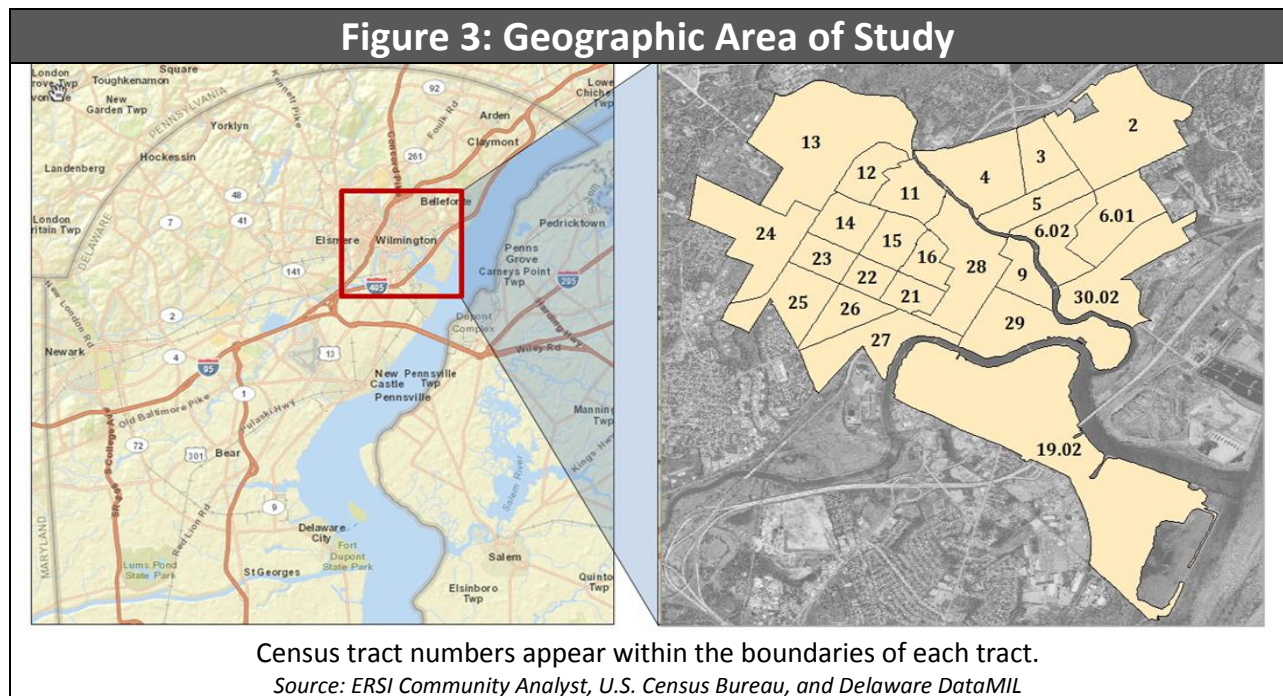
#### **D. The State of Brownfields in Delaware**

The Site Investigation and Restoration Section of Delaware's Department of Natural Resources and Environmental Control (DNREC-SIRS) is responsible for monitoring all of the state's hazardous waste sites, including brownfields, voluntary cleanup sites and hazardous substance cleanup sites. DNREC-SIRS has identified 893 sites statewide (DEN, 2013), including 199 brownfield sites (O'Mara, 2011). Of these, 184 have been officially certified as brownfields by DNREC (DNREC-SIRS, 2013b). Certified sites may apply for state funding to help cover the cost of site investigation and remediation. More than 100 of these sites have initiated remedial activities (O'Mara, 2011).

A total of 137 DNREC-SIRS sites in Delaware (approximately 15% of all sites) have received certificates of completion of remedy (COCR), signifying that the properties have been capped or remediated (DNREC-SIRS, 2012). Completely remediated sites require no further action. Capped sites must enter into site-specific stewardship agreements, which typically require continued monitoring and maintenance. A total of 55 brownfield sites (approximately 30% of all brownfields) have been remediated—four sites required no further action while remaining ones have committed to long-term stewardship agreements (O'Mara, 2011).

## E. Analysis of Brownfields and Socioeconomic Indicators

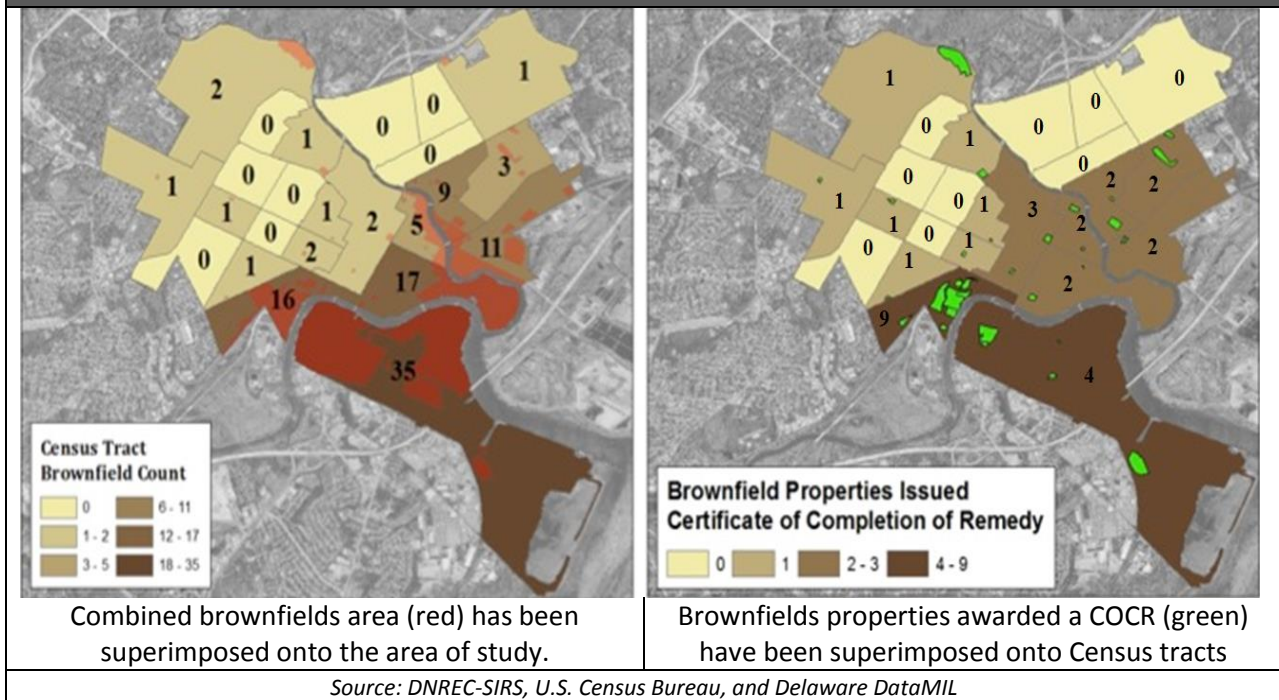
Many studies have found a strong geospatial relationship between marginalized communities and brownfield sites (UCC 1987; Bullard 1990; Bullard, Mohai, Saha & Wright, 2007; EPA Office of Environmental Justice, 2013). In *The Brownfields Challenge* (1999), research staff at the Center for Energy and Environmental Policy (CEEP) revealed these links with respect to Wilmington. In particular, the study showed high correlations between brownfields locations and communities with a high percentage of minority residents, people living in poverty and communities with above average populations of children five years of age and younger (CEEP, 1999). The current study indicates that the same pattern persists.



The 24 census tracts within the Wilmington municipality comprise the geographic area of study (Figure 3). A total of 108 brownfield sites have been identified inside the Wilmington study area, accounting for nearly 20 percent of the municipality's total land. Most of these brownfields are concentrated in South and East Wilmington, along the Christina and Brandywine riverfronts. Thirty-five of these sites have received certificates of completion of remedy (COCR), signifying that the properties require no further action, or have entered into long-term stewardship agreements. Redevelopment projects have occurred at several of these sites. Figure 4 shows both the distribution of brownfields in Wilmington as well as those sites that have received a COCR within census tracts.<sup>96</sup>

<sup>96</sup> For the purposes of this analysis, all individual certified state-funded and federal funded brownfields listed in DNREC's Environmental Navigator (DEN) were used to create a combined brownfields area.

**Figure 4: Brownfields Distribution in Wilmington**



More than 71,000 residents, in more than 29,000 households, live within the Wilmington study area.<sup>97</sup> Aggregate numbers show that African Americans make up the largest segment of the population (53.8 percent), followed by Caucasians (31.9 percent) and Latinos (11.5 percent) (U.S. Census Bureau, 2011e). Wilmington’s median household income, \$38,386, is well below the State and national average, and poverty rates have risen over the past twenty years, from 18.1 percent in 1990 to 23.9 percent in 2010 (U.S. Census Bureau, 2011d). More than 80 percent of Wilmington’s residents have received high school diplomas or an equivalent, while just over a quarter of residents have obtained advanced degrees (U.S. Census Bureau, 2011a).

Less than half of Wilmington’s residents own their homes and roughly 15 percent of all housing units are vacant (U.S. Census Bureau, 2012). Only a quarter of Wilmington’s households are led by married couples (compared to the national average of approximately 50 percent). Single female-headed households comprise 24 percent of Wilmington’s households, compared to only about 14 percent for New Castle County as a whole. Moreover, single female-headed households with children under the age of 18 comprise almost 15 percent of all City households compared to just about 8 percent for New Castle County (U.S. Census Bureau, 2011e). Aggregate criminal activity, the total number of reported murder, rape, robbery, assault, burglary and motor vehicle thefts, is nearly three-and-a-half times both the national average and for New Castle County (ERSI, 2012).

<sup>97</sup> For the purposes of this analysis, all census information provided comes from the 2010 U.S. Census which uses the American Community Survey (ACS) 5 year estimates from 2006 to 2010 and was published in 2011.



While these averages give a general impression of current social and economic conditions in Wilmington, they conceal substantial disparities within the City, particularly along its socioeconomic fall line.

To better characterize these differences, data from individual census tracts were compared. For each indicator, CEEP researchers used the relative amount of brownfields area and the population density of each tract to calculate a weighted average for the combined brownfields area. This allowed us to look at data as they related to brownfields communities. It also allowed for a comparison of socio-economic indicators across five different geographic levels: Brownfield areas, COCR areas, the City of Wilmington, Newcastle County, and the State of Delaware.

Data were grouped into six categories:

- Race—displays minority composition;
- Economics—shows poverty levels, unemployment, per capita income and median household income;
- Housing and Crime—indicates home ownership, vacancy and rental rates and the total crime index;
- Families and Children—shows single female-headed households, single female-headed households with children under 18 and young children (those 5 years old and younger);
- Educational Attainment—indicates high school and college graduates; and
- Participation Opportunity—provides an index that examines internet access, computer ownership, cell phone ownership, and vehicle ownership.

The socioeconomic data have been displayed and summarized in the figures which follow. In each figure, brownfields have been superimposed onto the 24 census tracts that define the study area. A figure combining selected socioeconomic indicators is provided as well. In addition, a data table summarizing a wider range of socioeconomic indicators across the aforementioned geographic levels is included at the end of this section.

**Figure 5: Minority Composition and Brownfields**

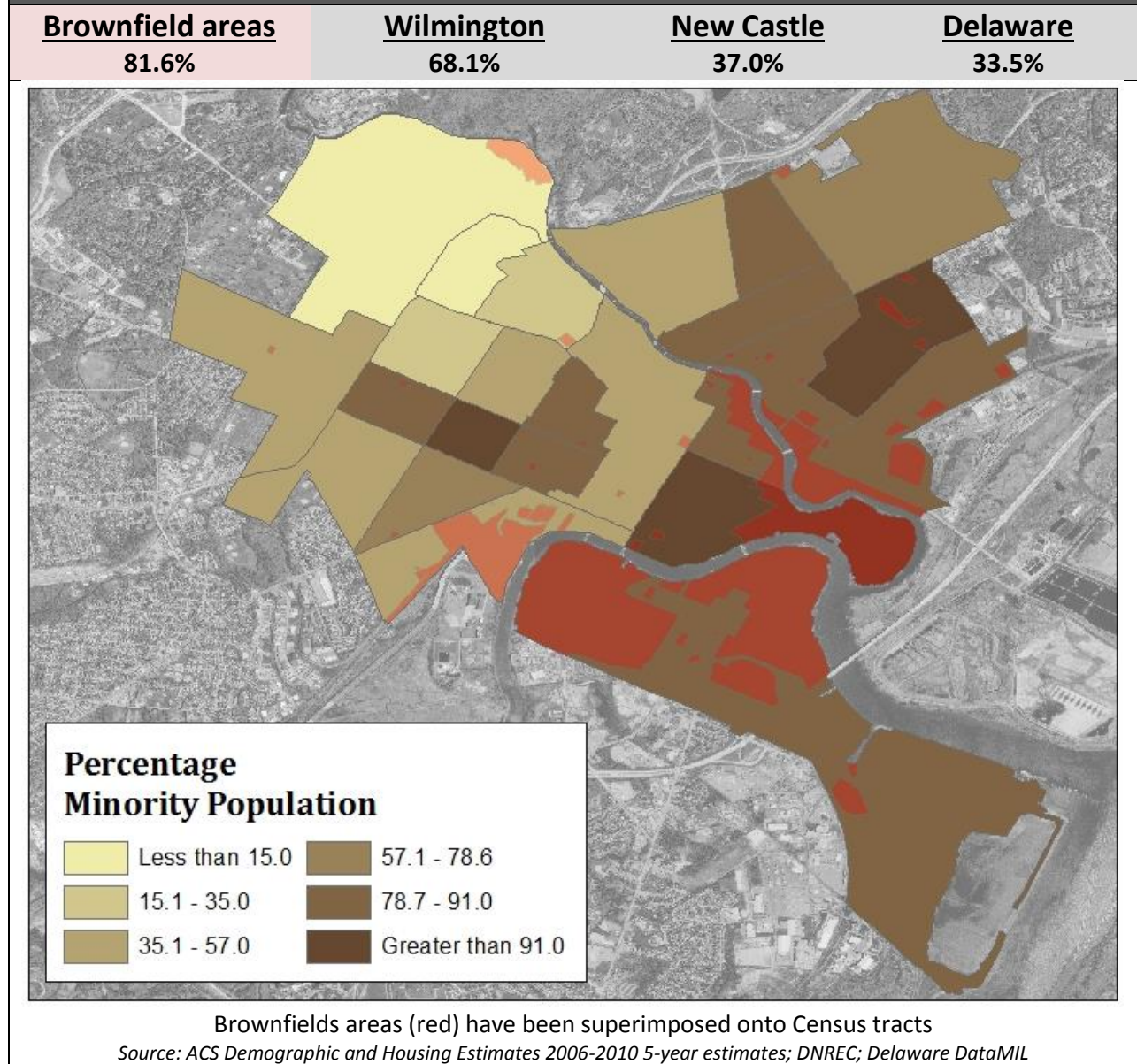


Figure 5 looks at minority composition of brownfields. Within the Wilmington study area, almost two-thirds of the population is minority. A clear pattern of racial segregation exists in the City whereby Northwest Wilmington is mostly Caucasian, and East and Southwest Wilmington is mostly minority. Brownfields communities, which are concentrated in East and Southeast Wilmington, have a much higher proportion of minority residents (81.6 percent), compared to Wilmington as a whole (68.1 percent), Newcastle County (37.0 percent), and the state of Delaware (33.5 percent).

**Figure 6: Poverty and Brownfields**

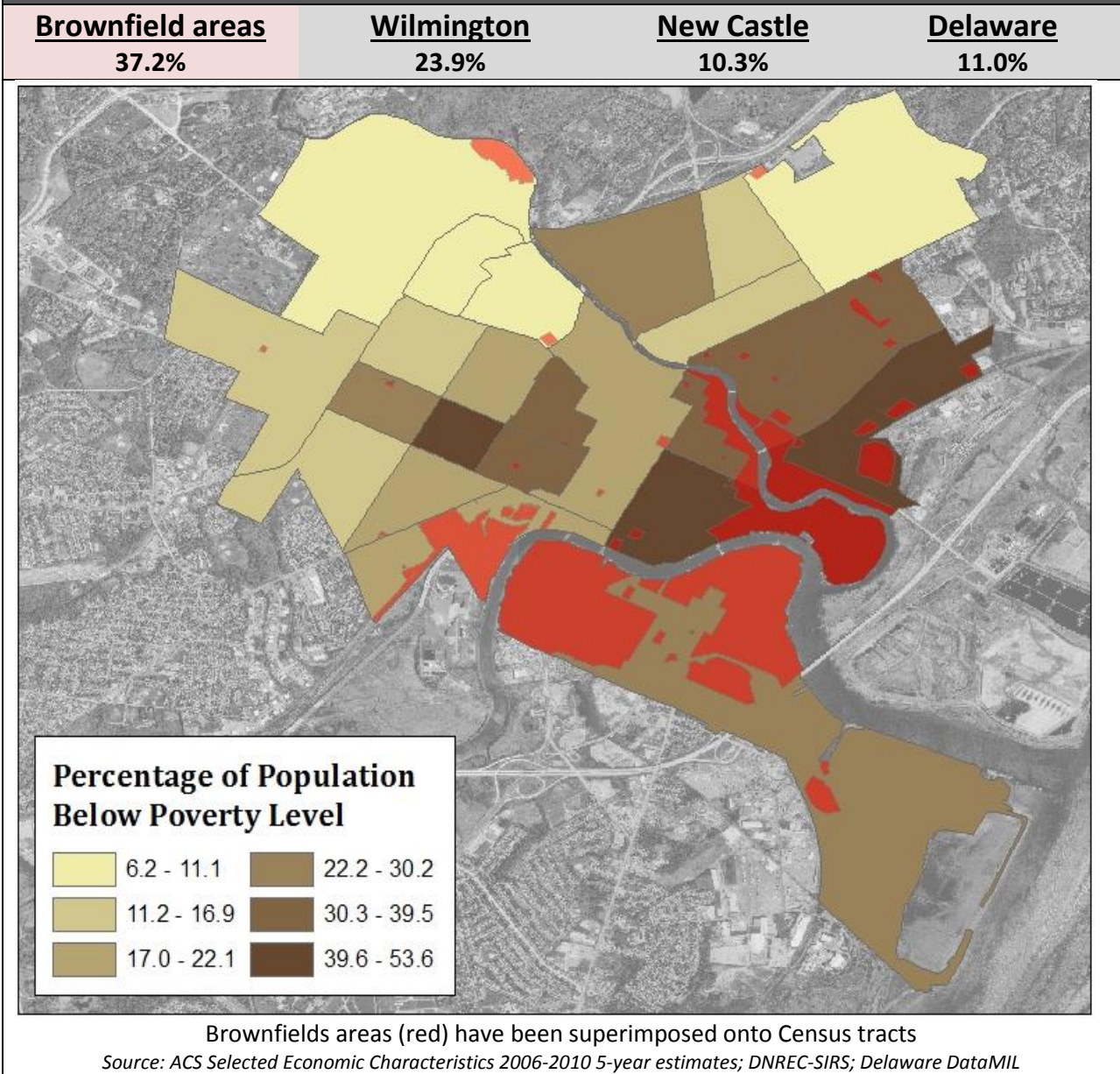


Figure 6 shows the spatial correlation of poverty on brownfields. Within the Wilmington study area, nearly a quarter of the population lives below the poverty level. It is important to note that the prevalence of poverty varies significantly between census tracts, from a low of 6.2 percent (census tract 13) to a high of 53.6 percent (census tract 29).<sup>98</sup> Poverty rates are highest in East and South Wilmington.<sup>99</sup> More than one-third of brownfields residents live in poverty (37.2 percent), a substantially greater number than Wilmington (23.9 percent), New Castle County (10.3 percent) and Delaware (11.0 percent).

<sup>98</sup> Figure 3 on page 76 identifies the boundaries of the City’s census tracts.

<sup>99</sup> East Wilmington is defined as census tracts 29, 30.02 and 6.01; South Wilmington as census tract 19.02.

**Figure 7: Unemployment and Brownfields**

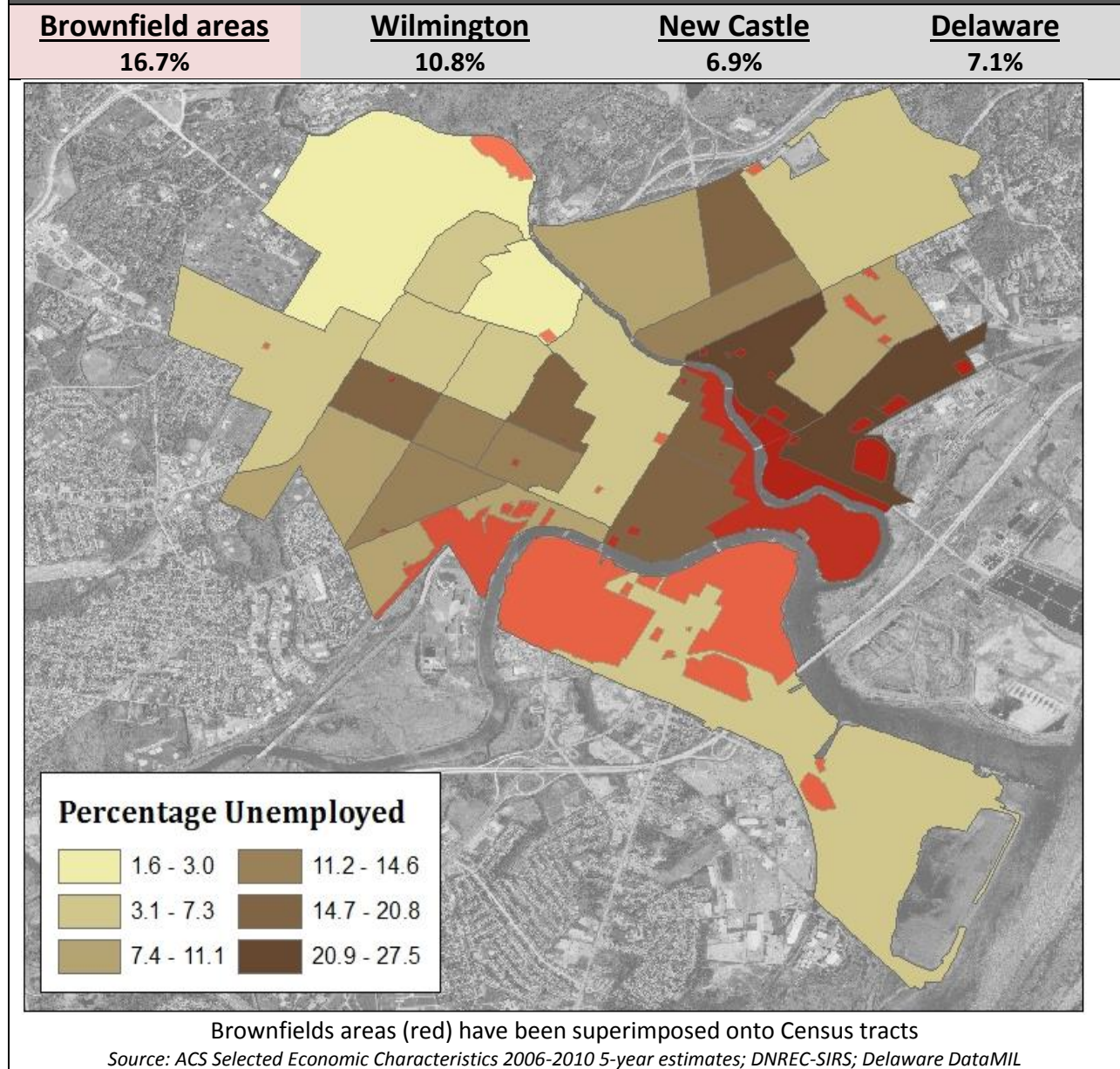


Figure 7 documents the correlation between unemployment and brownfields. Overall, the unemployment rate in Wilmington (10.8 percent) exceeds the national average (7.9 percent). As with poverty, the rate of unemployment varies widely between areas, from a low of 1.6 percent in one neighborhood (census tract 11) to a high of 27.5 percent in another (census tract 6.02). Unemployment rates are highest in East Wilmington and lowest in Northwest Wilmington. Unemployment rates in brownfield communities (16.6 percent) are more than twice the national (7.9 percent), state (7.1 percent) and county (6.9 percent) rates, and substantially higher than Wilmington’s rate (10.8 percent).

**Figure 8: Owner-Occupied Housing and Brownfields**

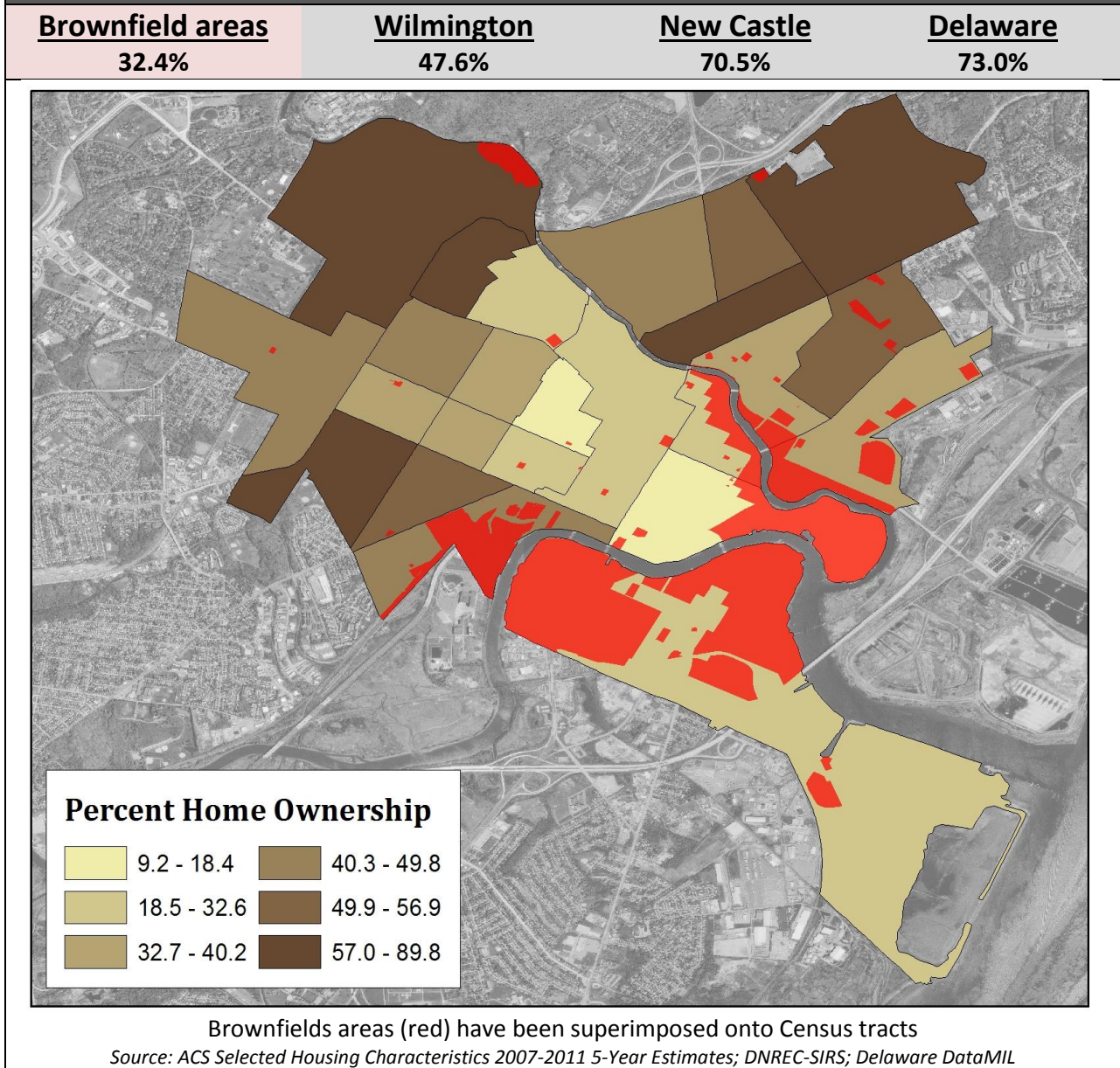


Figure 8 captures the pattern of home ownership and brownfields. Owner-occupied housing in Wilmington (47.6 percent) is well below the national average (87.8 percent). While the average is low, the disparity across areas is considerable, from a low of only 9.2 percent (census tract 29) to a high of 89.8 percent (census tract 13). In general, the majority of housing units in North and West Wilmington are owner-occupied while most residents in South and East Wilmington occupy rental housing. Less than a third of brownfields residents (32.4 percent) own their own homes. The majority of brownfields residents occupy rental properties.

**Figure 9: Female-Headed Households and Brownfields**

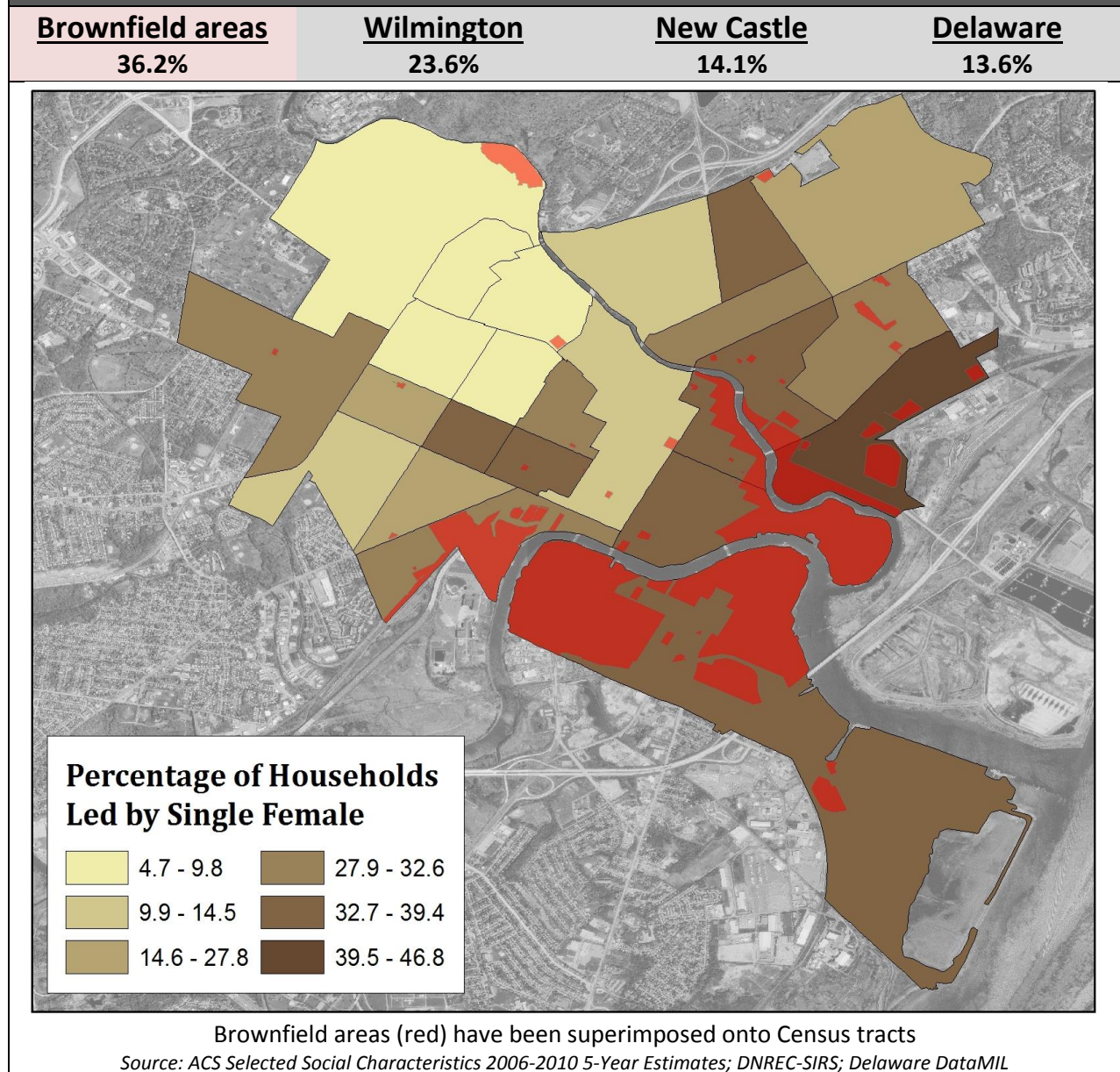


Figure 9 presents the correlation between female-headed households and brownfields. The rate of single female-headed households in Wilmington (23.6 percent) is nearly twice the national average (12.6 percent). There is a large disparity between areas, from a low of 4.7 percent (census tract 13) to a high of 46.8 percent (census tract 30.02). Single female-headed households are more common in East and South Wilmington. Within brownfield communities, single female-headed households make up more than one-third of all households (36.2 percent) which is higher than Wilmington (23.6 percent), New Castle County (14.1 percent) and Delaware (13.6 percent).

**Figure 10: Young Children and Brownfields**

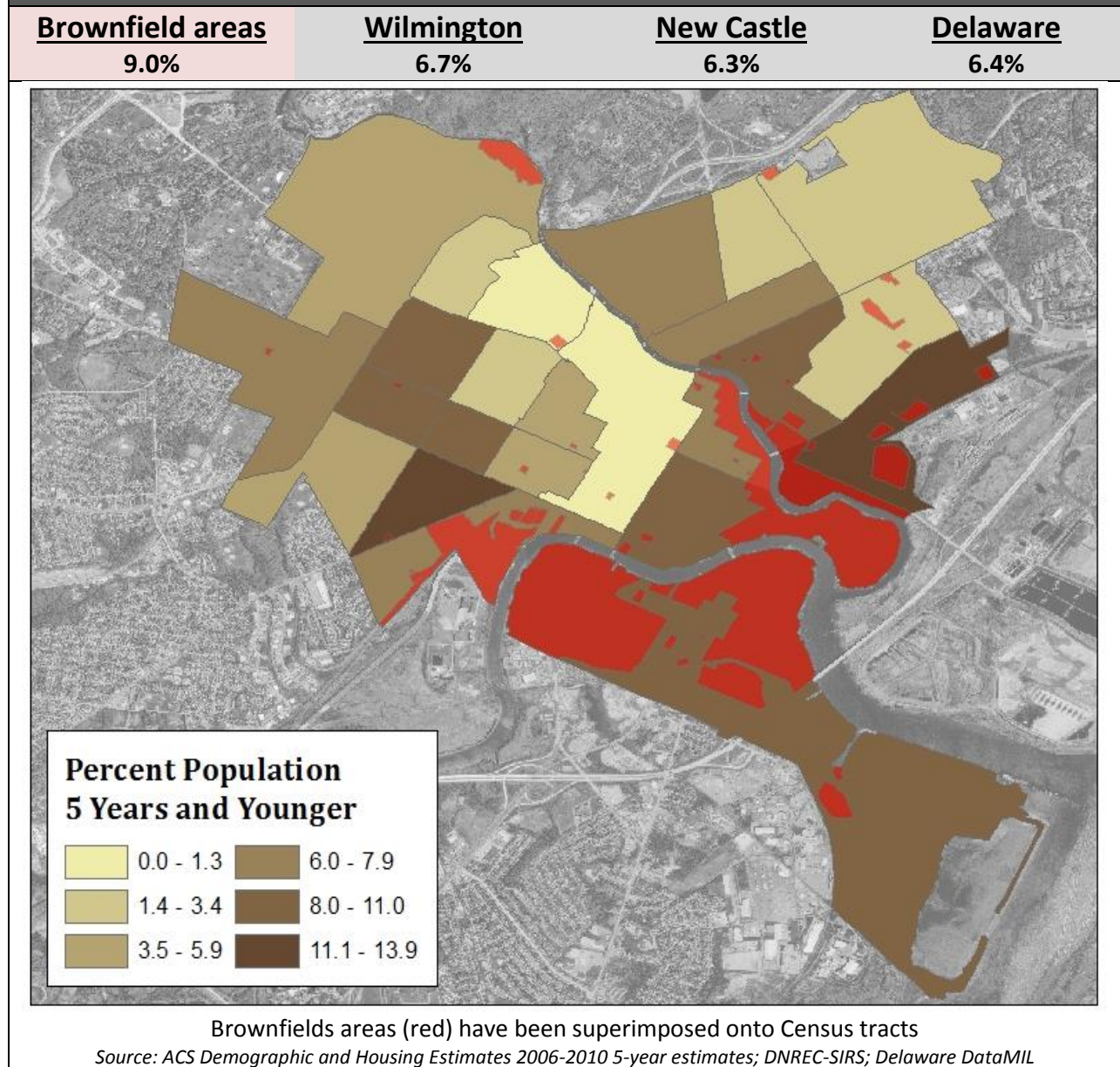
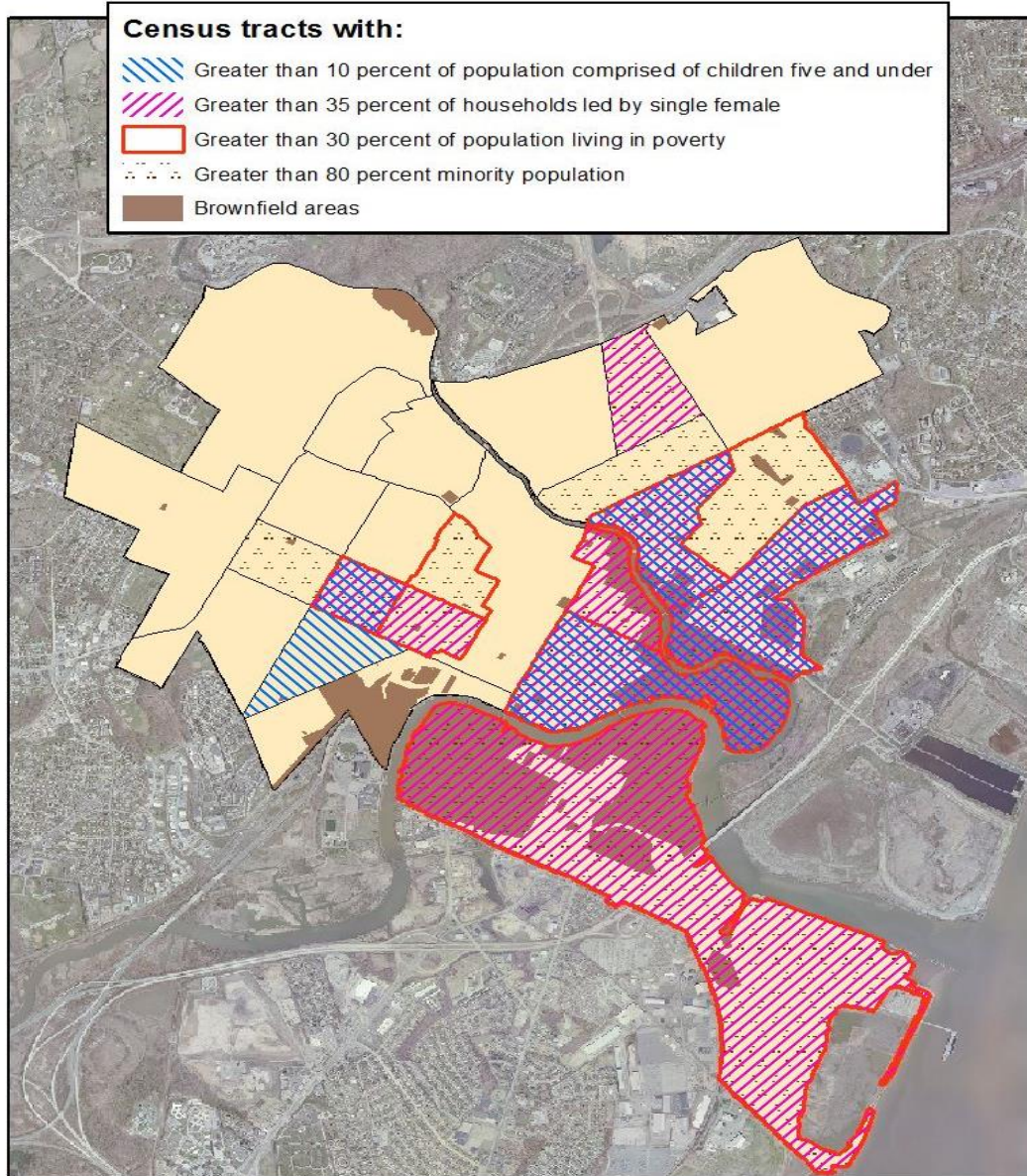


Figure 10 examines the correlation between residents of the most at risk population, young children (five years of age or younger), and brownfields. Young children make up 6.7 percent of Wilmington’s population, comparable to the national average of 6.6 percent. This percentage varies between areas, from no reported young children (census tract 28), up to almost 14 percent (census tract 26). The socioeconomic fall line that typically divides the City is not as pronounced for this indicator. Nonetheless, young children in Wilmington are 30 percent more likely to live in census tracts with high brownfields concentrations than their counterparts in the City as a whole, the County or the State. Young children make up a larger proportion of the

population in brownfield communities (9.0 percent), compared to Wilmington (6.7 percent), New Castle County (6.3 percent) and Delaware (6.4 percent).

## Figure 11: Minorities, Poverty, Female-Headed Households and Young Children in Brownfields

Poverty and family composition in relation to brownfields in Wilmington



Brownfields areas (brown) have been superimposed onto Census tracts

Sources: American Community Survey: Selected Economic Characteristics, 2006-2010, 5-year estimates

American Community Survey: Selected Social Characteristics, 2006-2010, 5-year estimates

American Community Survey: Demographic and Housing Estimates, 2006-2010,

5-year estimates; DNREC; Delaware DataMIL



Figure 11 combines selected socioeconomic characteristics of community residents and correlates them with brownfields across the Wilmington study area. In the Wilmington study area, brownfields communities are largely made up of minority residents, many of whom live below the poverty level. A high percentage of households are led by single females and young children under the age of five make up a disproportionate percentage of the population.

Table 7 provides an expanded summary of socioeconomic data, contrasting brownfields areas with areas that have received a Certificate of Completion of Remedy (COCR), Wilmington, and New Castle County. It provides a snapshot of the situation confronting brownfields communities and highlights environmental justice concerns. As the table reveals, brownfield communities in the City of Wilmington have:

- Higher rates of minority residents;
- Higher unemployment and poverty rates;
- Higher crime and vacancy rates;
- Lower median income and owner-occupied housing rates;
- Higher rates of single female headed-households and single-female headed-households with children 18 years old and under;
- Higher rates of children 5 years old and younger;
- Lower rates of educational achievement (both high school and college degrees); and
- Lower rates of participation opportunity.

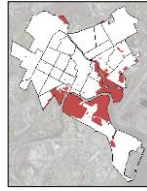
It is worth noting that the socioeconomic characteristics of COCR areas, which have presumably been remediated, contrast starkly with brownfield areas as a whole. Poverty and unemployment rates are lower in COCR areas. Household incomes and home ownership rates are substantially higher. This indicates that minority residents have not been the beneficiaries of the State's cleanup efforts. Minorities comprise a substantially lower proportion of the population, and far fewer households are led by single mothers in COCR areas. Furthermore, median rental rates in COCR areas are 30 percent higher than in brownfields communities.

Because the data provides a single snapshot in time, inference on the basis of geographic comparison should be approached with care. Past research suggests that market-driven redevelopment strategies tend to give priority to those sites with the most potential for profitability. In these cases, brownfields sites in distressed neighborhoods are often neglected (McCarthy, 2009), while revitalized areas attract new, often wealthier residents (Greenberg, 2007). A more in-depth analysis of the Wilmington case study area is required to determine whether this is the case in the City.

Nonetheless, the patterns and characteristics found in CEEP's *The Brownfields Challenge* (1999) study are found to persist as of this 2014 publication.

**Table 7: Socioeconomic Indicators of Brownfields Communities**

**Socioeconomic Indicators  
Geographic Comparison**



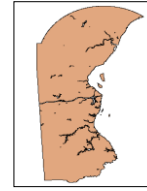
**Brownfield  
Areas**



**COCR Area**



**Wilmington**



**New Castle  
County**

**Economic**

Percent below poverty	<b>37.2</b>	23.0	23.9	10.3
Percent unemployed	<b>16.7</b>	11.7	10.8	6.9
Median household income	<b>\$30,641</b>	\$50,934	\$38,386	\$62,474
Per capita income	<b>\$17,035</b>	\$27,271	\$25,228	\$31,220

**Housing and Crime**

Total crime index	<b>420</b>	391	362	108
Percent owner occupied housing	<b>32.4</b>	49.3	47.6	70.5
Percent vacant housing	<b>21.2</b>	16.2	14.7	8.0
Median rent	<b>\$750</b>	\$979	\$872	\$987

**Families and Children**

Percent female head of household (HoH)	<b>36.2</b>	26.5	23.6	14.1
Percent female HoH with children	<b>27.1</b>	17.1	14.9	8.1
Percent population under 5 years age	<b>9.0</b>	6.3	6.7	6.3

**Race**

Percent Latino or Hispanic	<b>4.3</b>	8.0	11.5	8.1
Percent Caucasian	<b>18.4</b>	40.3	31.9	63.0
Percent African American	<b>75.1</b>	48.6	53.8	22.9
Percent Native American	<b>0.01</b>	0.0	0.3	0.2
Percent Asian	<b>0.3</b>	0.5	0.7	4.2
Percent minority	<b>81.6</b>	<b>59.7</b>	<b>68.1</b>	<b>37.0</b>

**Educational Attainment**

Percent with high school diplomas	<b>76.5</b>	81.2	80.5	88.4
Percent with Bachelor's or higher	<b>12</b>	19.8	25.1	32.4

**Participation Opportunity Index**

Percent households own computer	<b>55.6</b>	64.0	63.8	80.6
Percent households with Internet access	<b>52.9</b>	60.0	60.7	78.1
Percent households own cell phone	<b>73.9</b>	79.4	79.0	89.0
Percent households own vehicle	<b>66.4</b>	81.3	75.7	92.3
Participation Opp. Index (out of 400)	<b>248.8</b>	284.7	279.2	340.0

## V. Delaware's Brownfields Program

Brownfields efforts in Delaware have been ongoing for more than 20 years. This section examines the State's brownfields assessment, remediation and redevelopment efforts. It begins with a summary of national and state brownfields law and policy and follows with an overview of Delaware's brownfields program. It then analyzes brownfields efforts and the brownfields process within Wilmington in accordance with the following seven selected criteria: Leadership and Coordination, Funding Mechanisms, Community Involvement, Economic Aspects, Environmental Aspects, Social Aspects, and Access and Transparency. These criteria were selected after a literature review showed their frequent use (NEJAC, 1996a; 1996b; 1996c; 2006; 2013; EPA, 2009; 2013a; 2013b; Lee & Mohai, 2012; PCSD, 1996; 1997; HUD-EPA-DOT Partnership 2009)

This analysis, coupled with lessons learned from other brownfields programs, serves as the basis for the last section of the report which details our conclusions and recommendations.

### A. The Evolution of National Policy

A series of environmental health crises in the 1970s, epitomized by the Love Canal disaster, led to federal legislation designed to identify and clean up hazardous waste sites. The Comprehensive Environmental Response Compensation and Liability Act (1980), more commonly known as CERCLA/the Superfund law, required the EPA to identify and gauge the potential risk of contaminated properties. Sites posing the greatest threat to the environment and public health were placed on a National Priorities List (NPL). The law originally followed a "polluter pays" principle, authorizing the EPA to collect monetary damages from potentially responsible parties (PRPs). The law also established a fund (Superfund), financed with revenues generated from a tax on petroleum and chemical products, to cover the cost of cleaning up "orphaned sites" for which no PRP could be identified (EPA Region 9, 2011).<sup>100</sup>

CERCLA (1980) initially enjoyed broad public support. However, the law's "strict" and "joint and several" liability provisions raised equity concerns. Under these provisions, any party involved with the property (including those bearing no responsibility for contamination) could be held accountable for the entire cost of cleanup. This led to costly litigation and alienated prospective purchasers who elected to develop elsewhere. As a result, many abandoned and contaminated sites languished, while development pushed into the suburbs, exacerbating urban sprawl (Greenberg, 2007).

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<sup>100</sup> CERCLA (1980) funding for orphaned sites has shifted over time. Taxes were collected from industries until 1995. Since then additional monies for the Superfund, when needed, have periodically been provided by appropriations from Congress.

In response problems with the implementation of the Superfund law, EPA launched the brownfields pilot program in 1993, providing “seed money” to local governments to incentivize urban redevelopment (EPA, 2012). The program quickly gained broad public and political support and the EPA expanded the program in 1995 (Greenberg and Hollander, 2006). Congress later passed the Brownfields Tax Incentive Act (1997) and the Small Business Liability Relief and Brownfields Revitalization Act (2002) (EPA, 2012b). These laws provided tax subsidies, liability protection and financial support to prospective purchasers who agreed to clean up and redevelop brownfields properties.

**Table 8: Summary of National Legislation**

<b>National Brownfields Policy and Legislation</b>
<b>Resource Conservation and Recovery Act (1976)</b> —Authorized the EPA to monitor hazardous wastes from “cradle to grave,” including its generation, transportation, treatment, storage, and disposal.
<b>Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (1980)</b> —Authorized the EPA to identify and cleanup hazardous waste sites that posed a threat to human health and the environment. Gave EPA the power to hold potentially responsible parties accountable, through “strict” and “joint and several” liability provisions, for the cost of investigation and cleanup. Created a "Superfund" to clean up orphaned sites when potentially responsible parties could not be identified or located.
<b>EPA Brownfields Pilot Program (1993)</b> —EPA established an experimental grant program to incentivize urban redevelopment. Thirty-one grants for “brownfields pilot projects” were awarded to local governments during the 2-year trial period.
<b>EPA National Brownfields Program (1995)</b> —EPA expanded the brownfields pilot project program. Initially the program was financed through the Superfund.
<b>Taxpayer Relief Act (Brownfields Tax Incentive) (1997-2011)</b> —Allowed developers to fully deduct the costs associated with brownfields assessment and cleanup, including costs incurred prior to passage of the law. The law expired in 2011 and has not been renewed by Congress.
<b>Small Business Liability Relief and Brownfields Revitalization Act (2002)</b> —Granted liability waivers to non-responsible parties that agreed to remediate brownfield properties. Authorized up to \$250 million in funding for competitive and non-competitive brownfield grants to incentivize urban redevelopment.
<b>American Recovery and Reinvestment Act (2009)</b> —Allocated a one-time stimulus of \$100 million to the EPA Brownfields Program for the assessment and cleanup of brownfield properties.
<b>Source:</b> EPA brownfields laws and statutes/laws and executive orders: <a href="http://www.epa.gov/brownfields/laws/index.htm">www.epa.gov/brownfields/laws/index.htm</a> and <a href="http://www.epa.gov/lawsregs/laws/">www.epa.gov/lawsregs/laws/</a>

The brownfields laws were the culmination of a gradual shift, from a regulatory to an incentive-based redevelopment policy. The funding from the federal government to lower levels of government currently comes principally from two primary sources: non-competitive grants (CERCLA Section 128a) and competitive grants (CERCLA section 104k). Noncompetitive grants are distributed to state and tribal brownfields programs on the basis of past performance.

They can be used for assessment, cleanup and redevelopment, as well as for administrative, legal and insurance purposes (Bartel, 2013). Competitive grants are divided into four categories: assessment, cleanup, revolving loan fund and job training. Eligible parties for competitive grants include governmental entities and non-profit organizations.<sup>101</sup> Applications are ranked according to project feasibility, community need, expected benefit and public involvement.<sup>102</sup>

**Table 9: EPA Competitive Brownfields Grant Funding**

<b>EPA Competitive Funding (2003-2012)</b>	
<b>Assessment</b>	<b>\$480.1 M</b>
<b>Cleanup</b>	<b>\$286.1 M</b>
<b>Revolving Loan Fund</b>	<b>\$157.6 M</b>
<b>Job Training</b>	<b>\$45.0 M</b>
Source: EPA grant announcements: <a href="http://www.epa.gov/swerosps/bf/pilot_grants.htm">www.epa.gov/swerosps/bf/pilot_grants.htm</a>	

The 2002 brownfields law authorizes up to \$50 million in annual funding for non-competitive grants and up to \$200 million for competitive grants (Ramseur, 2008).<sup>103</sup> As of 2012, the EPA has awarded \$968.7 million in competitive grants, and close to \$500 million in noncompetitive grants (EPA, 2013c).

Since its inception, the EPA’s Brownfields Program has funded more than 20,000 property assessments and completed more than 800 cleanups. The EPA estimates that \$17.79 has been leveraged for every program dollar spent, creating more than 87,000 jobs related to cleanup and redevelopment (EPA, 2013d). Despite this investment and the program’s accomplishments, only a fraction of the total number of brownfields have been assessed and remediated. The EPA estimates there are more than 450,000 brownfields sites remaining in the country, while other estimates place the number closer to one million (EPA, 2012a; Greenberg & Hollander, 2006).

From the outset of its efforts, the EPA has viewed the Brownfields Program as more than another tool for economic redevelopment. It has sought to address the inequities common to brownfields communities and has declared its intent to promote sustainable development. Applicants for grant funding are required to demonstrate how project proposals will both involve and benefit local residents to ensure equitable development outcomes (EPA, 2013b). Moreover, community participation, in the EPA’s view, should be proactive, not reactive. That is, participation should not be limited to soliciting feedback on predetermined projects. Both competitive and noncompetitive grants can be used to fund community participation efforts. The EPA encourages grant recipients to create programs in which residents are given the power to steer redevelopment to “promote the general welfare through the improvement of the public health and safety, economy, and environment of the targeted communities” (EPA, 2013b).

<sup>101</sup> Non-profits are only eligible for cleanup and job training grants.

<sup>102</sup> Project feasibility is given the heaviest weight during the selection process (Stolle, 2013). The EPA also advises that applications are viewed favorably if they can demonstrate an ability to leverage additional funds (EPA, 2013b).

<sup>103</sup> While Congress has allocated the full amount for non-competitive grants, appropriations for competitive grants have fallen short, averaging less than \$100 million over the past ten years.

## **B. The Evolution of Delaware's Brownfields Laws and Policy**

Like the federal government, Delaware initially adopted a command-and-control framework to manage contaminated sites with the reduction of environmental risk as the paramount good. The Hazardous Substance Cleanup Act (HSCA), enacted in 1990, empowers DNREC to identify and remediate sites that threaten human health or the environment, in particular, those sites not covered by the Superfund program (O'Mara, 2011; Poling, 2012). Like the federal CERCLA (1980), Delaware's HSCA contains "strict" and "joint and several" liability provisions, giving the state broad power to collect compensation from responsible parties. The law also followed in the footsteps of CERCLA (1980) by creating a fund (the HSCA fund) to help the State pay for the cleanup of orphaned sites (HSCA-7 Del. Chapter 91).

To address liability concerns and avoid costly litigation, Delaware amended HSCA in 1995 to create a state-run Voluntary Cleanup Program (VCP). The VCP can grant conditional liability protection to current site owners when they make a good faith effort to clean up the property (HSCA-7 Del. Chapter 91). Although the VCP proved to be an effective negotiating tool when responsible parties could be found, abandoned properties still posed a dilemma. Contamination was suspected at many of these sites, but without expensive testing, that suspicion could not be confirmed. Prospective purchasers, faced with the prospect of being held liable for the actions of previous owners, were hesitant to invest in these properties.

To address these concerns and stimulate redevelopment, Delaware defined "brownfields" in 2001 (see Table 10) and authorized funding through the Delaware Economic Development Office (DEDO) for brownfields assessment and remediation. In 2005, the Brownfields Development Program (BDP) was created, expanding liability protection to prospective purchasers. Developers which entered into a Brownfield Development Agreement (BDA) under the BDP could then qualify for monetary assistance, tax incentives, and conditional liability protection once remediation was completed (HSCA-7 Del. Chapter 91).

Overall, Delaware's brownfields focus and its strategic efforts have mirrored the federal shift from a command-and-control to an incentive-based model. While the State retains the authority to pro-actively clean sites that pose immediate environmental or health risks, brownfields redevelopment has been its focus since 2005, with the State aiming to harness the power of the market, using an array of grants, loans and tax breaks to entice investors to redevelop contaminated properties.

Initially reliant on enforcement, the State now attempts to negotiate a settlement with potentially responsible parties (PRPs), prior to exercising any coercive action. Within the brownfields program, Delaware has largely abandoned the polluter pays principle. Although DNREC-SIRS investigates each brownfields applicant to assess whether they are responsible for existing

contamination, efforts to seek damages from prior owners, even when they can be found, have been abandoned (Carter, 2013; O'Mara, 2011; Poling & Ratsep, 2013; HAC, 2013b).

**Table 10: Summary of State Legislation**

<b>Delaware Brownfields Policy and Legislation</b>
<p><b>Hazardous Waste Management Act (1980)</b>—Authorizes the state to regulate hazardous waste from “cradle to grave,” including its generation, transport, treatment, storage, and disposal.</p>
<p><b>Hazardous Substance Cleanup Act (1990)</b>—Authorizes DNREC to identify and clean up hazardous waste sites that pose a threat to human health or the environment, in particular, those sites not remediated under the Superfund program. The state may hold potentially responsible parties liable for the cost of investigation and cleanup through “strict” and “joint and several liability” provisions. This law created a fund (HSCA fund) to clean up orphaned sites when potentially responsible parties cannot be identified.</p>
<p><b>Voluntary Cleanup Program (1995)</b>—The HSCA was amended to include the Voluntary Cleanup Plan. Responsible parties that agree to complete an approved plan of remediation become eligible to receive a certificate of completion of remedy (COCR). The COCR provides conditional liability protection which may be passed on to subsequent purchasers.</p>
<p><b>Funding and Defining of “Brownfields” (2001)</b>—This HSCA amendment authorizes DNREC to certify brownfields, officially defined as “any vacant, abandoned or underutilized real property, the development or redevelopment of which may be hindered by the reasonably held belief that the real property may be environmentally contaminated.” It also authorizes the Delaware Economic Development Office (DEDO) to disburse up to \$1 million in grants for brownfields assessment and remediation.</p>
<p><b>Expanded Liability Protection (2003)</b>—This HSCA amendment extends conditional liability protection to non-responsible prospective purchasers who are willing to conduct assessments and cleanups.</p>
<p><b>Brownfields Development Program (2004)</b>—The HSCA was amended to create the Brownfields Development Program, codifying a prospective purchaser agreement (referred to as a Brownfield Development Agreement [BDA]). Prospective purchasers which enter into a BDA receive state certification (certified brownfields) and qualify for state funding. Conditional liability waivers are also granted once remediation plans are implemented. The owner may apply for a certificate of completion of remedy (COCR) which can be passed on to subsequent purchasers.</p>
<p><b>Brownfields Advisory Committee (BAC) (2005)</b>—This group was created to provide advice to DNREC on brownfield rules, policies and procedures and to represent the public interest and community perspectives for Delaware’s Brownfields Program.</p>
<p><b>Hazardous Substance Cleanup Act Policy on Brownfield Grants (2006)</b>—Appropriates \$5 million from the HSCA Fund to reimburse the costs of site investigation and remediation to parties that have entered into a Brownfield Development Agreement (BDA).</p>
<p><b>Hazardous Substance Cleanup Act Advisory Committee (2013)</b> —The former BAC changed its name to HSCA Advisory Committee (or HAC Committee) to better reflect the scope of the committee’s activities.</p>
<p style="text-align: center;"><b>Sources:</b> Delaware Code (Title 91, Chapter 91: <a href="http://delcode.delaware.gov/title7/c091/index.shtml">http://delcode.delaware.gov/title7/c091/index.shtml</a>; Wirtz 2013; Poling and Ratsep 2013; O'Mara 2011.</p>

While the market-driven approach has resulted in the assessment, remediation and redevelopment of several brownfields properties, many have criticized the policy as being overly friendly to developers and over-reliant on economic factors (Greenberg, 2007; Carter, 2013; Graham, 2013; SBCA, 2013a; SBCA, 2013b). Since brownfields funding only covers a portion of redevelopment costs, only those with substantial resources can afford to participate. This, critics contend, gives absentee owners a distinct advantage and influence in guiding brownfields decision-making (which sites are given priority, which are redeveloped and for what purpose), diminishing the ability of brownfields communities to self-determine the development pathway of their neighborhood. Moreover, since the force behind the program is primarily economic, investigation and remediation are more likely to occur at sites with economic potential, not at sites that pose environmental, health or social risks to the community (Greenberg, 2007; Carter, 2013; Graham, 2013; SBCA, 2013a; SBCA, 2013b).

### C. Program Overview

The State defines an individual brownfield as “any vacant, abandoned or underutilized real property the development or redevelopment of which may be hindered by the reasonably held belief that the real property may be environmentally contaminated” (HSCA-7 Del. Chapter 91). In order to obtain state certification, developers must demonstrate that a prospective property meets the state’s definition of a brownfield (DNREC, 2006). Once approved, the developer may negotiate a Brownfields Development Agreement (BDA) with the state. To enter into a BDA, the applicant: cannot be responsible for any contamination present on the property; cannot be affiliated with any potentially responsible parties; and cannot currently own the property.<sup>104</sup>

Upon entering into a BDA, the developer agrees “to assess and respond to the actual, threatened, or perceived release of hazardous substances at the site” (DNREC-SIRS, 2008). An initial (Phase I) assessment, which includes a review of past land use/site history, is used to determine the potential for contamination. If concerns are found, a more comprehensive (Phase II) assessment is conducted. This includes soil and water sampling, as well as an assessment of the risks posed by contamination (Poling & Ratsep, 2013). If contamination is discovered, a proposed plan of remediation is developed. Once approved, the proposal is implemented as a final plan. Remediation requirements for sites vary, contingent upon the toxicity and mobility of the pollutants present, as well as the future use of the property (Poling & Ratsep, 2013).<sup>105</sup>

Sites that are fully remediated require no further action. Sites that require continued monitoring or maintenance must enter into Long Term Stewardship (LTS) agreements with the state

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<sup>104</sup> Current site owners must negotiate an agreement through the Voluntary Cleanup Program.

<sup>105</sup> For example, a redevelopment project with a future use as a commercial property for stores will require a lower level of cleanup than one which is to be used as a park or open space.



(DNREC, 2010). Developers that fulfill the requirements of the BDA are granted liability protection against harm caused by existing contamination, provided they adhere to the requirements of the BDA and LTS agreements and take no action that may exacerbate or release existing contamination (DNREC-SIRS, 2008).

Developers that meet these conditions may apply for a Certificate of Completion of Remedy (COCR). The COCR, and the liability protection it represents, may be passed on to subsequent purchasers. The COCR does not provide liability protection for any future releases unrelated to the original contamination (HSCA-7 Del. Chapter 91).

#### **D. Leadership and Coordination**

Three agencies are primarily involved with brownfields efforts: DNREC-SIRS, the Delaware Economic Development Office (DEDO) and the Mayor's Office of Economic Development (MOED) in Wilmington. Wilmington has specific standing because it is home to the bulk of the State's brownfields.

The state's brownfield program is administered by the Site Investigation and Restoration Section (DNREC-SIRS) of DNREC's Division of Waste and Hazardous Substances. Tim Ratsep serves as DNREC-SIRS program administrator. DNREC-SIRS issues brownfields certifications, negotiates BDAs, and oversees all aspects of brownfields assessment and remediation. SIRS manages all three of the programs created through HSCA and its subsequent amendments, including the HSCA enforcement program, the Voluntary Cleanup Program (VCP), and the Brownfields Development Program (BDP). There is no position dedicated exclusively to brownfields coordination. Most SIRS employees have overlapping duties in all three programs (Poling & Ratsep, 2013).

The majority of field and laboratory work related to brownfields remediation is performed by state-certified contractors. Contracts are awarded on a competitive basis and work plans must be approved by DNREC-SIRS staff prior to implementation. Currently, SIRS has certified 31 environmental consulting firms and eight analytical laboratories (Hall, 2013a).

The HSCA Advisory Committee (HAC), formerly the Brownfields Advisory Committee, was created in 2005 to develop and promulgate regulations governing BDP policies. The HAC also serves as a vehicle to coordinate with other state and local agencies, including Delaware's Department of Education and Department of Transportation, and the city's Riverfront Development Corporation and housing authority (Ratsep & Wirtz, 2013). DNREC-SIRS staff meet regularly with staff from the City of Wilmington and frequently collaborate on brownfields redevelopment projects (Poling & Ratsep, 2013; Flynn, 2013). HAC subcommittees involved

with financial and regulatory aspects of the program are comprised exclusively of DNREC staff and contractors (Poling & Ratsep, 2013; Ratsep & Wirtz, 2013). The HAC meets quarterly.

DEDO, in collaboration with DRNEC-SIRS, administers a brownfields assistance program designed to help potential developers cover the costs of assessment and remediation. In order to be eligible for the program, the property must receive brownfields certification through DNREC-SIRS and demonstrate the potential to expand employment within the state by five or more jobs. The DEDO brownfields assistance program is administered by Jeff Stone (Stone, 2013).

The City of Wilmington previously had a full-time position for a brownfields coordinator but reorganized its program administration, creating the Mayor's Office of Economic Development (MOED) to administer city services for brownfield properties and to leverage funding for assessment and remediation, especially if a prospective purchaser shows interest and is willing to contribute money to a site's redevelopment. All city-owned properties are required to undergo phase I and phase II site assessments. The City of Wilmington contracts for brownfield assessment and remediation work, using DNREC's list of certified environmental consultants. The deputy director of MOED is responsible for overseeing brownfields redevelopment (Flynn, 2013).

## **E. Funding Mechanisms**

Between 1994 and 2011, the State of Delaware spent more than \$63 million on all HSCA activities, including brownfields redevelopment, voluntary cleanup, hazardous substance cleanup, storage tank monitoring, and emergency response actions (O'Mara, 2011). Together, DNREC-SIRS and DEDO have spent more than \$33 million on brownfields assessment, remediation and redevelopment activities (Leckie & Hall, 2013; Whaley, 2013).

Delaware's brownfields program, administered by DNREC-SIRS, receives funding from multiple sources, the bulk of which comes from the state's HSCA fund and federal non-competitive brownfields grants (Poling & Ratsep, 2013):

- DNREC-SIRS receives \$5 million annually from the HSCA fund to finance brownfields efforts.<sup>106</sup> As of 2013, the fund had a balance of more than \$10 million (HAC, 2013b). Funds may be used for assessment, cleanup, and administrative purposes, including employee salaries;<sup>107</sup>

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<sup>106</sup> The HSCA law levies a 0.9% tax on the sale of all petroleum products, (except for crude oil), with revenues accruing in the HSCA fund. Fines collected via enforcement actions are also added to the fund (O'Mara, 2011).

<sup>107</sup> DNREC plans to request another \$1 million annually for groundwater remediation (Poling & Ratsep, 2013).

- The EPA’s State and Tribal Response Program (CERCLA Section 128a) allocates non-competitive grant money to state programs. Funds may be used for a variety of purposes, including public and community outreach activities. DNREC-SIRS has received consistent non-competitive grant funding since 2003, an average of \$600,000 per year (Bartel, 2013); and
- The EPA awards competitive grants for brownfields. Combined, DNREC-SIRS and the City of Wilmington have received more than \$2 million in competitive grants for brownfields assessment, job training and to recapitalize a revolving loan fund between 1997 and 2013. A summary of Delaware’s competitive awards are listed in Table 11.

**Table 11: EPA Grant Funding For Delaware**

<b>EPA Competitive Grant Funding (1997-present)</b>		
<b>Year</b>	<b>Grant Type</b>	<b>Award</b>
<b>1997</b>	<b>Pilot Grant (Wilmington)</b>	<b>\$200,000</b>
<b>1998</b>	<b>Pilot Grant extension (Wilmington)</b>	<b>\$200,000</b>
<b>2002</b>	<b>Job Training (DNREC-SIRS)</b>	<b>\$200,000</b>
<b>2006</b>	<b>Job training extension (DNREC-SIRS)</b>	<b>\$141,764</b>
<b>2006</b>	<b>Assessment (Wilmington)</b>	<b>\$200,000</b>
<b>2006</b>	<b>Revolving Loan Fund (DNREC-SIRS)</b>	<b>\$1,000,000</b>
<b>2009</b>	<b>Assessment (DNREC-Coastal Programs)</b>	<b>\$200,000</b>
<b>2012</b>	<b>Remediation (Wilmington UDAG*)</b>	<b>Application pending</b>
* The Urban Development Action Grant Corporation is a quasi-governmental entity under the supervision of the City of Wilmington.		
<b>EPA Noncompetitive Grant Funding (2003-present)</b>		
<b>Year</b>	<b>Grant Type</b>	<b>Award</b>
<b>2003-2012</b>	<b>CERCLA Section 128a-Subtitle C (DNREC-SIRS)</b>	<b>\$6.12 million</b>
Source: EPA grant announcements ( <a href="http://www.epa.gov/swerosps/bf/pilot_grants.htm">www.epa.gov/swerosps/bf/pilot_grants.htm</a> ); Stole 2013, Bartel 2013		

Participation in the State BDP is voluntary and applicant driven. Public and non-profit entities may apply for funding up to \$1 million per brownfields redevelopment project and/or applicant in any fiscal year. Private applicants may be reimbursed up to \$225,000 for any individual brownfields project (the first \$125,000 on a dollar for dollar reimbursement and the next \$100,000 on fifty cents on the dollar reimbursement) and up to \$1 million per applicant in any fiscal year (Poling, 2012). In most years, the amount of funding has exceeded applicant demand. In the event that funds are depleted, additional applicants are rolled over into the next fiscal funding cycle (Poling & Ratsep, 2013). As a consequence, no formal ranking system has been adopted by DNREC-SIRS when it comes to brownfields properties.

DEDO's brownfields assistance program is funded through the Delaware Strategic Fund. The state capitalized the fund with \$2.25 million in 2001, and is authorized to appropriate additional funding of up to \$1 million per year (HSCA-7 Del. Chapter 91). Applicants may use DEDO grants to help cover the cost of phase II assessments and cleanup activities. To date, DEDO has supported 27 brownfield redevelopment projects, spending \$2,084,526 (Stone, 2013).

The City of Wilmington does not receive consistent local funding for brownfields (Flynn, 2013). However, the City has been awarded \$600,000 in federal funding through the EPA's competitive brownfields grant program from 1997-2013, beginning with a Brownfields Pilot Project grant in 1997 (EPA, 2013e). In 2012, the City (through the Wilmington Urban Development Action Grant Corporation) applied for a grant to help cover the cleanup costs of a former electroplating facility in Northeast Wilmington. The application is pending (Flynn, 2013). The City considers several factors when selecting projects, including the potential risk to public health and the environment. Priority is given to projects that are most likely to result in redevelopment.<sup>108</sup>

## F. Community Involvement

Past research has shown that decisions relating to brownfields redevelopment often overlook a key stakeholder—the people who live in brownfields communities (Lee & Mohai, 2012; NEJAC 1996b; 1996c, 2006; 2013). This observation may explain the trend observed in Wilmington and other cities where the bulk of cleanup and redevelopment activities take place in

“Brownfields redevelopment is often implemented via property-specific development efforts in the absence of cooperation in the community planning process...racial minorities and lower income residents are often excluded in governmental environmental decision-making processes, a fact that raises concerns about procedural justice.” (Lee & Mohai, 2012)

high-income, low-minority areas that least resemble brownfields communities (McCarthy, 2009). To counter this trend, the EPA instituted requirements to bolster community participation in its brownfields application process (EPA, 2013b). The City of Wilmington, in its 1997 brownfields pilot grant application to the EPA, recognized the need to improve community participation.

“There is a need to involve the community-at-large in the planning and project development process. Current participation is selective and sporadic. The goal of ensuring environmental justice by empowering, educating and protecting the community is best achieved through shared knowledge... Our intention is to

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<sup>108</sup> “We avoid investment in projects that will not be transacted or redeveloped. This tenet is fundamental to all the other factors considered during site selection” (City of Wilmington, 2005).

intimately involve the communities in the development projects at an early stage.”  
(City of Wilmington, 1996)

In keeping with this commitment to community participation, one-fifth of Wilmington’s original Pilot Project grant award was allocated to the Urban Environmental Center (UEC), an organization dedicated to improving citizen awareness on issues related to land use, water quality, soil contamination and brownfields redevelopment. The UEC received additional grant money in subsequent years, both from the EPA and the State to continue its efforts. However, the organization never received consistent funding and the staff was comprised entirely of volunteers. The UEC was forced to close its doors in 2012 after long-time administrator Dolores Washam retired (Washam, 2013).

At the state level, DNREC created the Community Involvement Advisory Committee (CIAC) in 1999 to identify and address barriers to the inclusion of under-served communities in environmental decision-making.<sup>109</sup> The CIAC’s original report, *Report of the CIAC to DNREC* (2001), was based on the findings of its three steering groups (DNREC and Communities, Land Use and Zoning, and Communities and Industry) and provided a list of 35 detailed recommendations to enhance community involvement.<sup>110</sup>

In 2001, CIAC went from being a one-time advisory committee to a permanent council. The newly named Community Involvement Advisory Council and the Community Ombudsman position were established as permanent fixtures of DNREC in 2001 to promote “public participation in the decision-making processes of the Department, ensuring, to the extent practicable, that no community in the State is disparately affected by environmental impacts” (29 Del. Chapter 80, § 8016A).<sup>111</sup>

The eleven CIAC committee members are appointed by the Governor, who is mandated to include residents from communities “adversely impacted by environmental factors or conditions” (29 Del. Chapter 80, § 8016A). At its discretion, the CIAC may recommend that DNREC establish Community Assistance Providers to engage with and advocate for residents of environmentally marginalized communities. According to the Community Ombudsman, the CIAC has assisted community groups seeking to redevelop potentially contaminated properties, encouraging those groups to participate in the State’s brownfields program (Brunswick, 2013).

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<sup>109</sup> CIAC was originally charged by DNREC, “To develop a set of recommendations for goals and DNREC actions and procedures to ensure that minority and low-income communities have access to public information and have the opportunity to effectively participate in the programs, services and public decision-making of the Department” (Global Environmental resources Inc., 2001).

<sup>110</sup> CIAC’s original report is available at <http://www.dnrec.state.de.us/dnrec2000/admin/busserv/ciacreport.pdf>

<sup>111</sup> “The CIAC and the Community Ombudsman work to increase the flow of information between communities and DNREC; increase community participation; and facilitate dialogue among all stakeholders in the decision-making process” (DNREC, 2013b).

## **Current Challenges**

Within the Wilmington study area, community participation varies, depending on the scope and type of proposed redevelopment. There are no laws or regulations which mandate community involvement. Neither the developer, nor state or local agencies are required to proactively engage with the community, unless the project receives federal funding (Poling & Ratsep, 2013). Although exceptions exist, community residents feel that their involvement is mostly reactive and that when outreach is conducted (which is common for large projects), it usually occurs after a project plan is well established (SBCA, 2013a; 2013b; Thomas, 2013). In such cases, community participation is often limited to feedback on a predetermined proposal (SBCA, 2013a; 2013b; Thomas, 2013).

The difficulty of residents to contribute in a meaningful fashion is compounded by a lack of community interest as most residents are forced to contend with more pressing social and economic challenges (SBCA, 2013a; 2013b;). Brownfields redevelopment simply isn't a priority for the average resident unless it will directly benefit them (SBCA, 2013a; 2013b;), and even if it were, many residents lack the basic tools required for civic engagement. Finally, and perhaps as a result of the preceding two points, residents don't believe they have the power to influence public policymaking (SBCA, 2013a; 2013b; Thomas, 2013).

Overall, these current challenges can best be grouped into two categories—institutional challenges and community challenges

### **The Institutional Challenge**

Public feedback for brownfields projects is solicited through announcements published in the *News Journal* and DNREC's website. Notification is also provided to state and local representatives whose district contains the proposed project. All public notices contain a brief summary of the project, including the site address, and a telephone contact for the DNREC-SIRS project manager (DNREC, 2013c). Written comments are accepted at four points during the brownfields development process:

- At the onset of BDA negotiations – 20-day comment period;
- After publication of the BDA legal agreement – 20-day comment period;
- After publication of the proposed plan of remediation – 20-day comment period; and
- After publication of the final plan of remediation – 20-day appeal period.

Community members may request a public meeting for any 20-day comment period (LaSorte, 2013). All initial and final plans of remediation, including those under active consideration, are posted on DNREC's website. Copies of these plans are also made available at the Wilmington Public Library (DNREC-SIRS, 2013d). Despite these opportunities, community members rarely

respond to solicitations for feedback and few submit written comments. According to DNREC staff, only one in a hundred announcements yields a request for a public meeting (Poling & Ratsep, 2013).

While City and State agencies are not required to proactively engage residents in brownfields communities in redevelopment projects (unless the project is federally funded), they may do so voluntarily. This often occurs with large redevelopment projects, or when the agency involved anticipates the potential for public benefit or stakeholder conflict (Poling & Ratsep, 2013). Outreach can take many forms. Typically, the developer and/or an agency representative will approach local elected officials and civic groups to solicit support for an initial project proposal. This may be followed by a larger community-wide meeting and information dissemination through print and online media (Flynn, 2013; Poling & Ratsep, 2013).

Although developers are not required to engage brownfields residents, DNREC-SIRS encourages developers that enter into a brownfields development agreement (BDA) with DNREC-SIRS to create public outreach plans.

“... it is DNREC’s expectation that applicants will be proactive in communicating project details w/ local elected officials and organized community groups. DNREC will help applicants develop an outreach program to gauge community support for a project. DNREC may also recommend outreach strategies to help align the project with community needs and expectations.” (DNREC, 2006)

To facilitate this process, DNREC-SIRS created a community involvement checklist in 2003 for developers to use. The list includes tactics for soliciting feedback from brownfield residents.<sup>112</sup> At the time, DNREC-SIRS stressed that “effective public involvement improves the content of the Department’s decisions while promoting democracy and building public trust in government.” (DNREC-SIRS, 2003)

Community residents may submit comments or request a public meeting in response to a public notice. When outreach has been actively promoted, it has resulted in collaboration between developers, government officials and the community in the past (SWNP Work Group, 2006; WUDAGC, 2012; Carter, 2013). Once apprised of a project, community groups are typically supportive, particularly if the project promises to deliver jobs for residents. However, neither brownfields developers nor any of the State’s brownfield programs are mandated to interact with the community (Poling & Ratsep, 2013).

In the past, DNREC-SIRS held regularly-scheduled meetings within brownfield communities in an effort to encourage community involvement. Initially, residents attended. According to

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<sup>112</sup> A copy of the “Community Involvement Checklist for Brownfields Sites” can be found in Appendix I of this report.

DNREC the meetings were discontinued due to a lack of community interest (Poling & Ratsep, 2013; Ratsep & Wirtz, 2013). DRNEC and City of Wilmington employees still attend community meetings when requested, or when involved in a major project within the community (Poling & Ratsep, 2013; Ratsep & Wirtz, 2013; Flynn, 2013; SWNP Work Group, 2006; SBCA, 2013b).

The HSCA advisory committee meets quarterly at DNREC-SIRS offices. Meetings are normally held on Thursday mornings. According to the committee's website, DNREC-SIRS "will rely on the HAC to represent broad public interest and community perspectives" (HAC, 2013)." At its inception, the HAC created an Education and Outreach Subcommittee to incorporate public feedback into the policy-making process. The subcommittee used targeted surveys to solicit input from elected officials and the general public, but received very little feedback (Ratsep & Wirtz, 2013). As a result, the subcommittee was discontinued. However, the HAC recently voted to reestablish the committee in an attempt to bolster community participation (HAC, 2013b).

HAC membership is open to any member of the public. Community members that join the committee are granted full voting privileges within the group (Wirtz, 2013). Currently, representatives from the Delaware Environmental Alliance for Senior Involvement and the League of Women Voters often attend meetings. By far, however, the majority of the committee is comprised of DNREC employees and environmental contractors. No brownfields community residents have joined the committee.

Recent HAC meetings have focused on rewriting state regulations governing hazardous waste management. DNREC employees attribute the lack of public participation to the technical nature of these meetings (Poling & Ratsep, 2013; Ratsep & Wirtz, 2013). Although the HAC was created to be a community forum to address proposed actions and gain feedback before final submission, community attendees admit they cannot follow much of the scientific and legal details that emerge during meetings. DNREC-SIRS officials are aware that the lack of civic participation is problematic and have considered altering HAC meetings. They are currently contemplating a format change which would dedicate the first half of each HAC meeting to community issues. The second half would be reserved for more technical discussions (Ratsep & Wirtz, 2013).



## **The Community Challenge**

Residents living in and around brownfield areas are aware that contamination is present, in the general sense (SBCA 2013a; 2013b). Many are unsure which properties are classified as brownfields, although they are able to identify abandoned and dilapidated industrial sites (SBCA 2013a; 2013b). Few are familiar with the types of contaminants present or the potential health risks associated with exposure. Moreover, the residents do not use DNREC's Environmental Navigator. For example, although frequent flooding events plague portions of South and East Wilmington, residents are chiefly concerned with property damage and the health risks associated with the overflow of untreated sewage, not with runoff from brownfield properties (SBCA, 2013b).

Community leaders are generally more informed about, and more supportive of, redevelopment projects, primarily because they hope these projects will bring jobs to the community (SBCA, 2013a; 2013b). However, most brownfields residents remain uninformed. Three major factors give rise to this problem (SBCA, 2013a; 2013b):

- Brownfields residents lack the basic tools for information access and civic participation;
- Residents are forced to contend with more pressing issues related to economic and social security (crime, unemployment, a lack of childcare); and
- Residents feel they have been marginalized and lack the power to influence important decisions related to urban planning and land use.

## ***The Tools of Civic Engagement***

As Figure 12 indicates, just over half of all households in brownfield communities own a computer (55.6%) or have access to the Internet (53.0%). Many households do not own a vehicle (33.6 percent) or cell phone (26.1 percent) (U.S. Census Bureau, 2011; ERSI, 2011).

Without Internet access, residents are unable to make use of the bulk of information posted online, including public meeting times. Moreover, many residents do not own a car and are reliant on public transit or friends and family for transportation (Oliver, 2013). Traveling outside of their community to attend a public meeting at DNREC offices can be difficult. In addition, HAC meetings are held early on Thursday mornings which is work time for residents.

**Figure 12: Participation Opportunity Index and Brownfields**

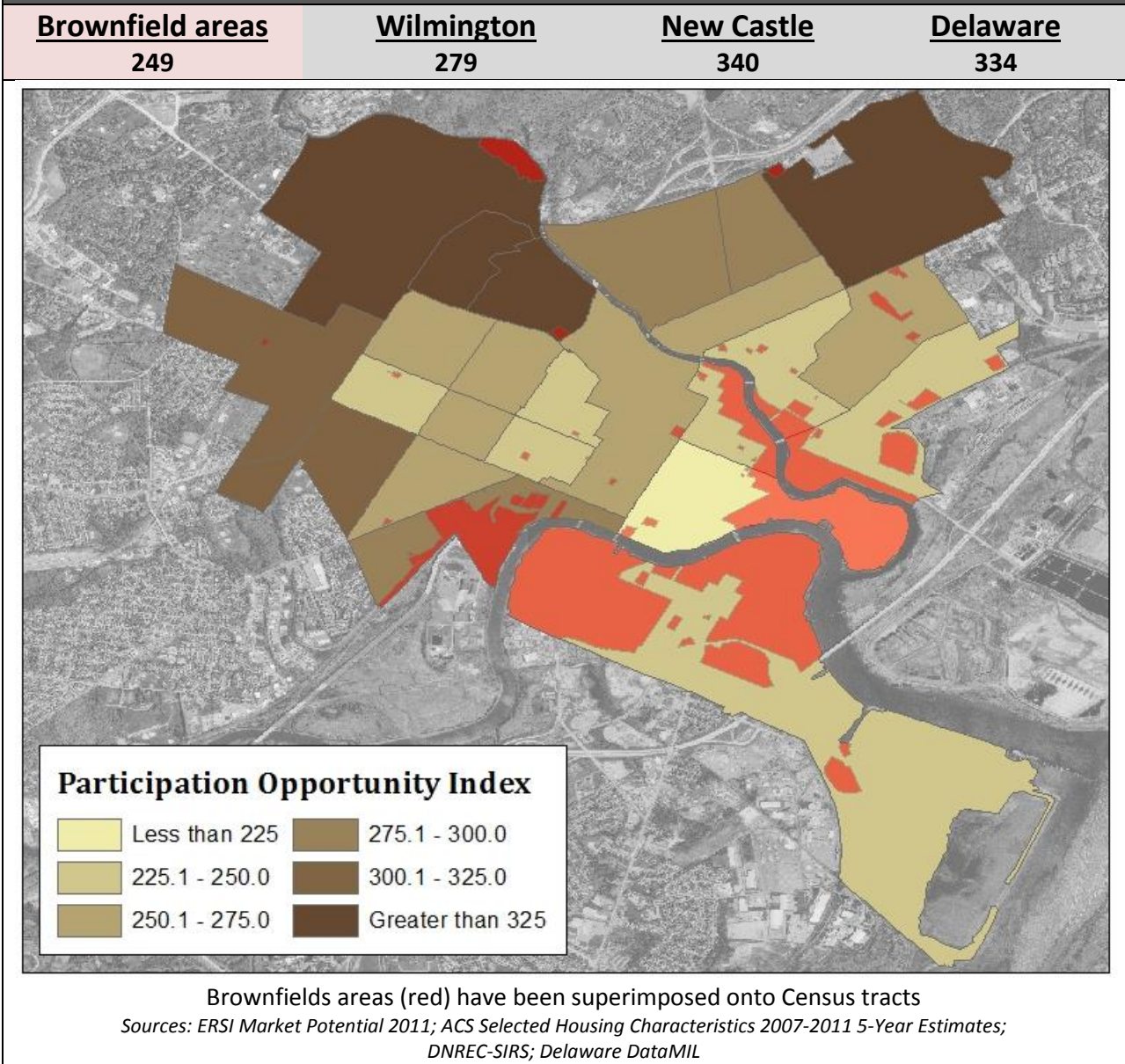


Figure 12 shows the participation opportunity index within brownfields. It represents a measure of a community’s ability to access public information and attend public meetings. The index, which ranges from 0 to 400, is a sum of the following indicators—the percentage of households which: own one or more computers; have internet access; own one or more cellphones; and own one or more vehicles. The participation opportunity index indicates that residents of brownfields communities have less access to tools that foster civic participation vs. their city-wide counterparts, including computer ownership (63.8 vs. 55.6 percent), Internet access ( 60.7 vs. 53.0 percent), cell phone ownership (79.0 vs. 73.9 percent) and vehicle ownership (75.7 vs. 66.4 percent).

## *Social and Economic Security*

Support for cleaning up and revitalizing abandoned properties exists, but overall, brownfields remediation is not a priority for most residents. The number one concern of community residents is crime (Thomas, 2013; SBCA, 2013a; SBCA, 2013b). As Figure 13 indicates, brownfields communities in Wilmington experience crime rates that are more than four times greater than the national average. This is especially the case for South Wilmington (Census tract 19.02) where crime rates are more than five-and-a-half times the national average and approximately five times the state and county averages (ERSI, 2012).

Figures 5 and 6, previously listed, show poverty and unemployment rates in brownfields communities respectively. Both poverty (37.2 percent) and unemployment rates (16.6) are significantly above the state and national average (U.S. Census Bureau, 2011d). Moreover, they are significantly above those rates for Wilmington as a whole (23.9 and 10.8 percent). Even having a job is no guarantee of economic security, as most local employment opportunities pay low wages (City of Wilmington, 2005). Median household income in brownfield communities is just 53 percent of the state and 68 percent of the city average (U.S. Census Bureau, 2011d).

Financial distress is compounded by the lack of stable housing and childcare. Two-thirds of brownfields residents rent their housing, more than twice the state average. Brownfields tenants spend a larger share of their income on housing (29 percent), compared to renters in Wilmington (27 percent) or Delaware (20 percent) (U.S. Census Bureau, 2011; U.S. Census Bureau, 2011d). In addition, single female-headed households with children make up more than a quarter of all households (27.1 percent) in brownfield communities (U.S. Census Bureau, 2011c). Existing daycare programs that are affordable have limited enrollment. As a consequence, the responsibility of childcare falls upon the mother and her extended family (Oliver, 2013).

### *A Marginalized Community*

Current strategies designed to encourage community involvement are primarily voluntary. Consequently, community participation is selective and sporadic.

Community residents are also frustrated with government attempts to address issues they view as chronic and high-priority. High crime rates and frequent flooding in brownfields communities are two such issues (Thomas, 2013; SBCA, 2013a; SBCA, 2013b). While construction of high-end projects along the Riverfront proceeds rapidly, residents contend that progress in addressing their community concerns has been slow, and in some cases, non-existent (Thomas, 2013; SBCA, 2013a; SBCA, 2013b). In addition, community leaders feel they lack the power to negotiate with developers. Too often, they complain, developers refuse to bargain in good faith, and the promises that are made during public meetings do not come to fruition. This is especially the case with regard to employment (Thomas, 2013; SBCA, 2013a; SBCA, 2013b).

**Figure 13: Total Crime Index and Brownfields**

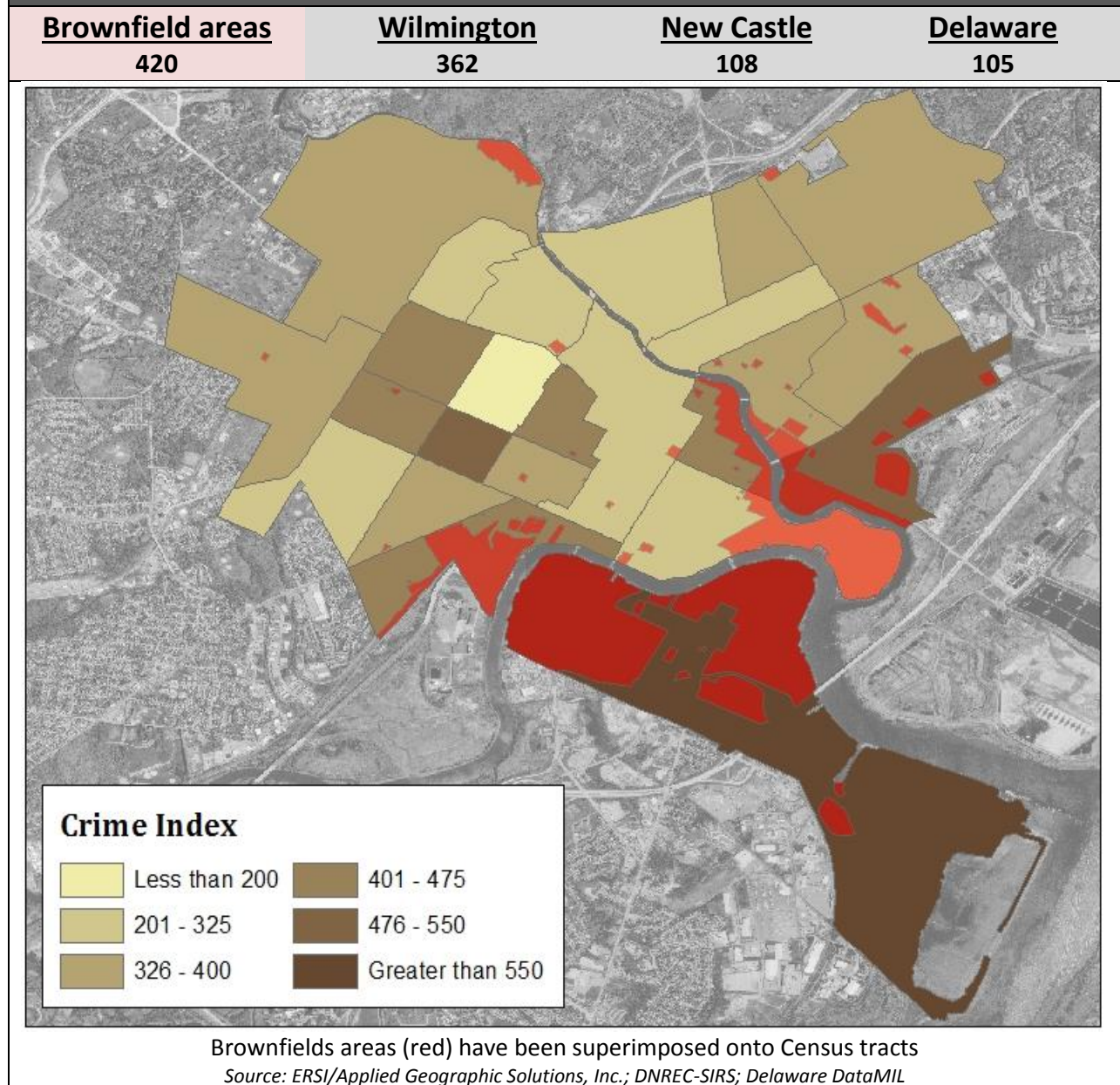


Figure 13 records the crime index within the Wilmington study area. The crime index is a measure of the relative occurrence of murder, rape, robbery, assault, burglary, and motor vehicle theft. A score of 100 is equivalent to the national average. Community residents in brownfields communities suffer from a considerably higher rates of crime (an index of 420) compared to Wilmington as whole (362), New Castle County (108) and Delaware (105). Brownfields residents repeatedly cite crime as one of the most pressing concerns of the community (Thomas, 2013; SBCA, 2013a; SBCA, 2013b).

Taken together, the low rate of participation and the lack of progress in the community’s eyes to address concerns have given rise to an atmosphere of cynicism. Residents are suspicious of the motives of outsiders into their community (state and city employees, developers and researchers). Residents also feel that academia has done little to bridge this gap. As with State and City brownfields efforts, academic outreach within the community is often project-based and inconsistent. Residents complain that researchers are rarely aware of past research, and as a result, spend most of their time “reinventing the wheel” rather than building off of previous findings (Thomas, 2013; SBCA, 2013a; SBCA, 2013b). Moreover, the non-binding recommendations that accompany academic research do not encourage brownfields communities to believe something tangible will result.

“People come in with their beautiful slides, all to no avail. The meat and bones of this is, we are not a priority, and that’s the problem.” (SBCA, 2013a)

## G. Economic Aspects

The majority of properties enrolled in Delaware’s Brownfields Program—if they do not remain vacant—are likely to be redeveloped for commercial or industrial use (Brown, Laznik, & Ratledge, 2010). The state maintains a database of “market-ready” sites to attract prospective purchasers and encourage economic development (DNREC-SIRS, 2013c). In order to quantify the overall economic benefits of brownfields redevelopment, DNREC funded research by the Center for Applied and Demography & Survey Research (CADSR) at the University of Delaware. In 2010, CADSR released *Economic Impact on Delaware’s Economy: The Brownfield Program* (2010) which documents its findings.<sup>113</sup>

- Property values at remediated sites, especially along the Christina Riverfront, increased substantially, bolstering tax revenues. Between 1998 and 2010, brownfields property values in New Castle County increased by \$455 million. In 2008 alone, the City collected an additional \$2.7 million in tax revenues from redeveloped brownfields sites;
- Economic modeling by CADSR also linked brownfields redevelopment to an increase in both GDP (an additional \$349 million) and employment (an additional 769 jobs in New Castle County), relative to what would have occurred without redevelopment; and
- The bulk of economic growth cited in the report was driven by an expansion of the financial and banking sectors. Financial sector employment was estimated to have grown by 14,829 percent, accounting for 1530 new jobs. Without growth in this sector, overall employment trends would have been negative.

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<sup>113</sup> The CADSR’s report is available at <http://udspace.udel.edu/handle/19716/10980>

Overall, CADSR noted that Delaware's brownfields program was a worthwhile investment economically. The report estimated a \$17.50 increase in property value for every state and federal dollar spent on assessment and remediation (Brown, Laznik, & Ratledge, 2010). At the same time however, questions remain regarding the equity of development.

Despite growth in the financial sector, unemployment and poverty have increased in Wilmington over the past decade (U.S. Census Bureau, 2000; U.S. Census Bureau, 2010d). In addition, there is no evidence that brownfields residents have or are currently benefitting from financial sector job creation. As the City of Wilmington observed in 2005:

“The corporate employers in Wilmington's central business district along with the north bank of the Christina River are geographically close in distance to [brownfield] communities; these jobs are dominated by financial services and are unattainable by residents in the target communities. Jobs for the skill sets of these residents are either non-existent or provide very low wages.” (City of Wilmington, 2005)

The trend in economic growth (with respect to GDP and employment) observed in the CADSR report is partly driven by the state's liberalized tax code, and consequent popularity as an onshore tax haven (Dyreg, 2013). Brownfields funding is ancillary to this trend, and in many cases has helped subsidize construction of infrastructure (residential, commercial and retail) that caters to the City's emerging class of affluent workers, especially along Wilmington's Riverfront. While redevelopment in the financial sector has generated additional revenues for the City via property taxes, there is no evidence it has created significant employment opportunities for brownfields residents.

All of the institutions involved in brownfields redevelopment seek projects that promote economic growth. Brownfields residents cite unemployment as a high priority as well. No formal policies are in place, however, to ensure that the fruits of economic development are divided equitably. DEDO requires brownfield grant recipients to create a minimum of five permanent, full-time positions, but there is no guarantee that these jobs will go to local residents. Both the City of Wilmington and DNREC encourage collaboration between developers and brownfields residents, but grant recipients are not required to negotiate community benefit agreements (CBAs) or involve affected community residents in decisions about how public funds are used (Flynn, 2013; Poling & Ratsep, 2013).

DNREC, in conjunction with Delaware Technical and Community College, has attempted to improve the employment opportunities of community residents via job-training. In 2002, DNREC-SIRS received a \$200,000 grant from EPA to launch its brownfield jobs-training program (EPA, 2013e). Fifty students from the Southbridge and East Wilmington communities

were initially recruited into the 152-hour program. Students received training in environmental assessment, site remediation, and construction. In 2006, DNREC was awarded an additional \$140,000 in supplemental funding from EPA. According to DNREC, of the 180 students who eventually completed the program, 177 initially obtained jobs (Poling, 2013). DNREC did not provide information on job retention rates after the initial job placement.

## **H. Environmental Aspects**

More than 890 HSCA-related sites have been identified in Delaware (DEN, 2013). Of these, 184 have been certified as brownfields (DNREC-SIRS, 2013b). As of 2011, the State had initiated assessment and/or cleanup activities at 101 sites (O'Mara, 2011). The level of remediation is site-dependent and contingent upon anticipated land use. For example, parcels destined for residential use have stricter standards than properties slated as commercial, industrial or mixed use (Poling & Ratsep, 2013). To date, four brownfields sites have been completely remediated, requiring no further action. An additional 51 sites have entered into long-term stewardship plans (O'Mara, 2011).

Within the Wilmington study area, a total of 108 brownfields sites have been identified. The majority of these sites are found along the confluence of the Brandywine and Christina rivers, with 93 sites concentrated in five riverfront census tracts. While this trend is certainly a reflection of Wilmington's industrial legacy, it is also a result of sampling bias. South Wilmington is the only portion of the City that has been comprehensively assessed for contamination (Carter, 2013). The total number of brownfield sites within the City is likely much higher. For example, a report released by CEEP in 2005 found that over 75 percent of the tax parcels in Southbridge and 44 percent of the tax parcels on Wilmington's Eastside were contaminated (CEEP, 2005).

Compared to other parts of Wilmington, brownfields residents endure far greater exposure to environmental contamination and thus face greater environmental health risks. According to DNREC, within these communities, "children and adults come into contact with brownfield parcels on a daily basis" (DNREC, 2006). In many cases, contaminated parcels lie immediately adjacent to residential housing and parks. While a direct link has yet to be proven, past studies suggest that brownfields residents suffer a higher risk of developing diseases commonly associated with environmental contamination, including cancer and asthma (DNREC, 2006; City of Wilmington, 2005; CEP 2005). In fact, an in-person survey of 210 households conducted by CEEP in cooperation with the People's Settlement Association and the Tau Eta Chapter of Chi Eta Phi (a sorority of nurses of color) found that Wilmington's Southbridge and Eastside communities self-reported far higher rates of health problems which can be associated with environmental exposure than did State residents (CEEP, 2005).

Most brownfields sites contain several contaminants at concentrations that exceed both federal and state standards for unrestricted use. Common contaminants include heavy metals (such as arsenic, lead, and mercury), and a collection of hydrocarbon compounds, including polycyclic aromatic hydrocarbons (PAHs), polychlorinated biphenyls (PCBs), and petroleum byproducts (DEN, 2013). Historically, these pollutants were released directly into the Christina and Brandywine rivers and surrounding marshlands (DNREC, 2006). Both rivers are classified as impaired by EPA,<sup>114</sup> and the City's remaining wetlands are heavily contaminated (Brightfields Inc., 2009; EPA, 2013; DNREC, 2009).

In addition to soil and water contamination, New Castle County suffers from poor air quality (American Lung Association, 2013). The communities of South and East Wilmington are bracketed by major highways, Interstate 95 to the north and Interstate 495 to the south. Carcinogenic byproducts of fossil fuel combustion are common topsoil contaminants found at sampled brownfields sites (DEN, 2013).

Participants in Delaware's Brownfields Program are typically better-informed about the nature of contamination on their properties. Although community residents are aware that contamination exists in a general sense, they are not often cognizant of the types of contaminants present or the potential risks associated with exposure (SBCA, 2013a; SBCA 2013b). Residents do not typically use DNREC's Environmental Navigator, nor are they sure of who to contact to obtain contaminant information (SBCA, 2013a; SBCA, 2013b). For most residents, brownfields contamination is not a salient issue.

Flooding, on the other hand, was of great concern to many brownfields residents, particularly in South Wilmington. A significant portion of South Wilmington lies in flood-prone areas. The proclivity for flooding is exacerbated by an inadequate drainage infrastructure. The community of Southbridge, 90 percent of which lies within the 100-year flood plain, has suffered repeated combined stormwater-sewage overflows. The community experiences an average of 32 flood events each year (DNREC, 2006).

Despite efforts undertaken by DNREC and the City of Wilmington to improve drainage flow, community residents complain that flooding has worsened in recent years. Several residents have linked this change to redevelopment along the Wilmington Riverfront, citing elevated foundations at new construction sites, many of which are remediated brownfield properties (SBCA, 2013b). Residents believe that runoff from these properties is flowing downhill into surrounding neighborhoods. Former DNREC and City employees suggest that the additional effluence generated by new development may be exceeding capacity, negating separate efforts to improve flow.

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<sup>114</sup> Impairment means these water bodies cannot be used for the designated uses of fishing or swimming.



## I. Social Aspects

Given the market-driven nature of the State's program, it is not surprising that most brownfields projects are redeveloped on the basis of economic factors. State and federal brownfields grants typically cover only a fraction of the costs for assessment and cleanup. While developers often purchase properties at less than market value, the cost of remediation may be considerable, and the return on investment sought by developers is high (Lee & Mohai, 2012). Despite this pressure, the State's Brownfields Program has helped balance Wilmington's development priorities, by giving "preference to brownfield redevelopment projects with public benefit, such as affordable housing." (DNREC-SIRS, 2012b)

Several church and nonprofit groups have leveraged brownfields grants to construct housing for low-income and disabled residents (Hall, 2013b; Merriman-Nai & Sargent, 2013). Speakman Townhomes, the largest of these developments, has received more than \$2.6 million from DNREC for site assessment and remediation activities, including \$1 million from DNREC-SIRS (Holden, 2007; Leckie & Hall, 2013). In return it has constructed 71 townhomes. Half of the 71 townhomes constructed were priced to be affordable to families making less than 80 percent of the area's median income. Many of the residents are first-time homeowners (The Ingerman Group, 2013), and presently, the townhomes are fully occupied (Merriman-Nai & Sargent, 2013). Several smaller housing developments for low-income and disabled residents have been also been constructed by Habitat for Humanity on other remediated properties (Hall, 2013b).

Recently DNREC asked the University of Delaware's Center for Community Research and Service (CCRS) to examine the social benefits associated with brownfields redevelopment. The resulting study, *Beyond Natural and Economic Impacts: A Model for Social Impact Assessment of Brownfields Development Programs and a Case Study of Northeast Wilmington* (2013), suggests that the creation of safe, affordable housing correlates with an increase in population, home ownership, and property values (Merriman-Nai & Sargent, 2013). It is important to note that due to limited resources, the study analyzed only three census tracts in East Wilmington (6.01, 6.02, and 30.02).<sup>115</sup>

The CCRS study found no evidence of gentrification in areas where brownfield properties were used to create mixed-income housing. In fact, this type of redevelopment was linked to economic and civic renewal in disadvantaged communities:

"Increased home ownership, and a decline in absentee landlord-owned rental properties, was considered the key to community stabilization and revitalization."  
(Merriman-Nai & Sargent, 2013)

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<sup>115</sup> As opposed to the study by CADSR, DNREC did not provide funding for the CCRS study.

Community residents have cited mixed-income housing as a positive aspect of brownfields redevelopment. They have also, however, criticized the exclusive, high-income residential development that has taken place along the Wilmington Riverfront, where the majority of brownfields redevelopment has occurred. No comprehensive study has been conducted to gauge the degree of gentrification in this area as a result of brownfields redevelopment. Moreover, the State is aware that brownfields redevelopment has been unequal:

“The focus of investments to revitalize the City of Wilmington has been on the Wilmington Riverfront ... In this area, brownfield sites have been cleaned up and transformed into a new baseball stadium, shops, public riverfront parks and river walks, office complexes for regional employers like ING Direct and AAA Corporate Headquarters, and executive apartments and town houses. South Wilmington has not benefited from these multi-million dollar endeavors ...” (DNREC, 2006)

Brownfields community residents recognize this unequal development. One resident of South Wilmington delivered a blunt assessment of the City and State’s current blueprint for redevelopment:

“I think they’re waiting for Southbridge to empty out, so they can redevelop without us in the way.” (SBCA, 2013a)

In addition to mixed-income housing, Delaware’s brownfields grants have subsidized several socially-oriented redevelopment projects:

- The Delaware Children’s Museum which provides educational opportunities for children now resides on the site of a former shipyard warehouse on the north shore of the Christina River. The museum received more than \$364,000 through the DNREC-SIRS brownfield program (Leckie & Hall, 2013).
- The Sunday Breakfast Mission provides shelter and meals for more than 200 impoverished men, women, and children each week. The mission also offers substance abuse counseling and career training programs. The Mission received more than \$816,000 through the DNREC-SIRS and an additional \$100,000 from DEDO (Leckie & Hall, 2013; Whaley, 2013).
- The Shoprite at Christina Crossing, a supermarket and pharmacy, now provides fresh produce and healthy food options in what was formerly a food desert. The Riverfront Development Corporation, which built the Shoprite, received \$1,000,000 from DNREC-SIRS (Leckie & Hall, 2013; Jacobson, O’Hanlon, & Clark, 2011).

Overall, the structure of Delaware's Brownfields Program tends to favor applicants with substantial financial resources and promotes projects for industrial and commercial reuse. Brownfields grants, to some extent, have helped to level the playing field by giving local non-profit groups the ability to influence neighborhood development. Without them, numerous projects that have benefitted under-served communities in Wilmington may never have occurred. Unfortunately, unlike the comprehensive study funded to look at the economic benefits of brownfields redevelopment, no equivalent study has been commissioned to gauge the overall social impacts of brownfields redevelopment efforts.

## **J. Access and Transparency**

At the local level, the City of Wilmington's website does not contain information with regards to either brownfields properties or the City's ongoing brownfields efforts. DNREC, through an agreement with EPA, had delegated powers and authorities across the state with regard to environmental matters. Its Delaware Environmental Navigator (DEN), is a comprehensive online database maintained by the agency which hosts information for all of DNREC's divisions, including DNREC-SIRS. DEN users may search for individual brownfields by site name, keyword or site identification number. The website also hosts a mapping application which displays point locations for all HSCA sites, including certified brownfields (DEN, 2013).

Unfortunately, DEN is not well known to brownfields residents. Moreover, it is not a user-friendly database. Detailed information on individual sites is difficult to access, and visitors must navigate through a series of links before reaching a "Site Info" page. In many cases, those links are inconspicuous, and DEN visitors are forced to guess how to proceed. Once located, the individual site information pages provide a brief summary of the brownfields property, with links to more detailed information. The "Fact Sheet" link offers a list of contaminants of concern, but does not provide contaminant concentrations or any type of risk assessment.

Website visitors must navigate to the "Documents" section, which for many brownfields sites includes a hundred or more scanned files, to find detailed contaminant information. The section contains copies of all records pertaining to the site, including consultant reports, legal agreements, correspondence and site assessment data. Website visitors must search through these documents to find the contractor-authored reports containing contaminant information. Those reports are often technical in nature and difficult for the lay person to decipher. In some cases, documents were rendered illegible because of poor scan quality (a sample document from DE-0149 is provided).

## DE-0149

### STATEMENT OF PURPOSE:

This Facility Evaluation ("FE") is being conducted by the Department of Natural Resources and Environmental Control ("DNREC"), Site Investigation & Restoration Branch ("SIRB") in accordance with the Hazardous Substance Cleanup Act ("HSCA") (7 Del. C. Chapter 91). The site is an inactive, unlined municipal waste and dry waste landfill. The purpose of the FE is:

- 1) To evaluate groundwater quality of the unconfined aquifer;
- 2) To determine the groundwater flow direction of the unconfined aquifer;
- 3) To assess the potential for impact to receptors, including new and existing wells for both private and public water supply use; and
- 4) To establish a groundwater restriction zone to preclude the installation of shallow water supply wells within an effective attenuation distance of the landfill. DNREC will draft a report of the FE results and provide recommendations for any necessary remedial action.

DEN's online mapping application gives point locations for all of Delaware's HSCA sites. It can be used to search for individual brownfields properties by site ID, site name or street intersection. When using the search option, point locations in the mapping application have links that connect the user directly to the site information page in the DEN database. Users also have the option to display a layer containing all of Delaware's certified brownfields sites. However, point locations in this layer do not contain links to the brownfield's site information page. In addition, although DRNEC maintains a data download page, GIS shapefiles of the State's brownfields are not available.

The total amount of information accessible through DEN is large. However, navigation through the database is complex. To find detailed information on pollutants, visitors must sift through a large amount of documentation. As a consequence, DEN provides an information maze, rather a site of publicly accessible and understandable information.

It should be noted that during the course of our research, shortcomings noted in the online database were balanced by helpful responses from knowledgeable staff. When contacted directly, project managers were often able to provide detailed information about individual sites, translating complex technical data and clarifying points of confusion. DNREC-SIRS staff responded quickly both to e-mail and phone messages, in many cases investing a significant amount of time and effort to answer CEEP research staff questions.

In addition to direct contact with DNREC staff, Freedom of Information Act (FOIA) requests may be made online. Both the DEN and DNREC's brownfields page contain links to FOIA

request forms. With the exception of DNREC-SIRS GIS data, FOIA requests were not needed to obtain the information in this report.

HSCA advisory committee (HAC) meeting information is also posted online. Agendas are posted several weeks in advance of meetings, and minutes are posted soon after. All legislative and rule-making proposals are posted online. The general public is invited to attend all meetings, comment on proposals, and suggest topics for the committee to take under consideration. While the bulk of brownfield data is stored online, copies of all proposed and final plans of remediation are also available at the Wilmington Public Library. In addition, DRNEC staff frequently attends public meetings to disseminate information and field questions.

### **Case Study: Parks and Brownfields in Wilmington**

Overall, the public's ability to access information relating to brownfields (and other HSCA sites) is hindered by a database that at times seems to emphasize quantity over clarity. This can create difficulties for the public to find out basic information related to contaminant concentrations and risk assessments. The situation with regards to public parks in Wilmington provides an important example of this problem.

Environmental justice is contingent upon the public's ability to access information pertaining to the location, concentration and exposure risk of existing contamination. This is especially true for sites with civic value, including parks and playgrounds, where residents, especially children, interact with the physical environment on a daily basis. Useful information on parks should highlight the contaminants present, their levels in relation to health risks and standards, define site status and discuss remediation plans.

Information on the relationship between parks and brownfields is not easily accessible for Wilmington. Although brownfields can be visualized on DEN's mapping application, they are depicted as individual points rather than areas, and are therefore not representative of the scope of potential contamination. A GIS match of City-owned parks shows six parks east of Market Street that lie adjacent to or directly overlay known brownfields sites. These are: Mayor John E. Babiarz Park, Elbert Playground, Brandywine Park, Barbara Hicks Playground, Kruse Playground, and Kirkwood Park. Figure 14 shows these parks in relation to brownfields areas.

Table 12 provides a summary of the assessment data CEEP researchers were able to gather on these brownfields areas using the DNREC-SIRS database. At the E. 7<sup>th</sup> St. Peninsula South, Fort Christina Marina, Elbert Park and Diamond State Foundry brownfield sites, both soil and groundwater contamination exceeded the EPA Residential Soil Screening Levels (RSL), EPA Drinking Water Maximum Contaminant Limits (DWMCL), and DNREC Screening Levels for both Soil and Water for at least one contaminant. For Eastside South Wilmington and Riverside brownfields sites, insufficient information exists to determine site status with respect to

contaminants. Without contaminant information, families and residents in proximity to these sites cannot know the risks posed by their use or any potential correlation between health events and environmental exposure. Moreover, members of the community have no ability to learn from the site or inquire from others about steps to be taken to address risks and hazards. In brief, adjacent communities are unjustly prevented from asking questions or taking actions.

**Figure 14: Brownfields and Parks in Wilmington**



Several parks (green) lie within or adjacent to brownfields (red). All certified, state-funded, and federally-funded brownfields, many of which are overlapping, constitute the brownfield area displayed. Contaminants found in the E. 7<sup>th</sup> Street Peninsula South, Elbert Park, and Diamond State Foundry sites (dark red outlines) are listed in Table 15.

Source: DNREC-SIRS, DNREC-Division of Parks and Recreation, Delaware DataMIL

**Table 12: Summary of Parks and Brownfields in Wilmington**

<b>Brownfields/Parks</b>	<b>Position</b>	<b>Most Recent Documents</b>	<b>Last Site Assessment</b>	<b>Site Status</b>
<b>E 7<sup>th</sup> St Peninsula South</b> <b>Mayor John E. Babiarz Park</b>	Overlaps	2003	1999	Soil and groundwater metal contamination exceeds EPA RSL/DWMCL and DNREC Screening Levels (2013)
<b>Fort Christina Marina</b> <b>Mayor John E. Babiarz Park</b>	Adjacent	2013	2013 (Site inspections conducted annually)	Soil and groundwater metal contamination exceeds EPA RSL/DWMCL and DNREC Screening Levels (2013)
<b>Elbert Park</b> <b>Elbert Playground</b>	Overlaps	2005	2005	Soil and groundwater metal contamination exceeds EPA RSL/DWMCL and DNREC Screening Levels (2013)
<b>Diamond State Foundry</b> <b>Brandywine Park</b>	Adjacent	2010	2000 (2010 site report unavailable)	Soil and groundwater metal contamination exceeds EPA RSL/DWMCL and DNREC Screening Levels (2013)
<b>Eastside South Wilmington</b> <b>Barbara Hicks Playground</b>	Overlaps	1997	Unknown	Unknown
<b>Riverside</b> <b>Kruse Playground</b> <b>Kirkwodd Park</b> <b>Brandywine Park</b> <b>Mayor John E. Babiarz Park</b>	Overlaps	1998	1996 (Phase I Assessment conducted)	Unknown

**Source: Delaware Environmental Navigator**

Phase II Assessment reports were obtained through the DNREC-SIRS database for three brownfields sites which overlap or lie next to one or more parks in the study area: the East 7<sup>th</sup> St Peninsula South, Elbert Park and the Diamond State Foundry brownfields sites. Of these three online reports, only the Elbert Park assessment was legible. Legible copies of the other two assessment reports were obtained via follow-up phone calls to the SIRS office. Table 13 provides a sample of the contaminants found at each of the brownfield sites in question as they apply to Federal and State Screening Levels.<sup>116</sup>

<sup>116</sup> This data is intended to serve the purpose of highlighting the presence of a few dangerous contaminants and is not meant to serve as a comprehensive listing of contaminants discovered.

**Table 13: Status of Brownfields after Phase II Assessments**

<b>Brownfield name (Park name)</b>	<b>Status after Phase II Assessment</b>
<b><u>E 7<sup>th</sup> St Peninsula South</u><sup>117</sup>  (Mayor John E. Babiarez Park)</b>	<ul style="list-style-type: none"> <li>• EPAs Residential Soil Screening Levels (RSL) were exceeded for Arsenic (As), Lead (Pb), Iron (Fe), Mercury (Hg), Manganese (Mn), Cadmium (Cd), Vanadium (Va), Aluminum (Al), Cobalt (Co), Copper (Cu) and Cyanide (CN).</li> <li>• EPAs Drinking Water Maximum Contaminant Limits (DWMCL) were exceeded for Lead (Pb), Iron (Fe), Manganese (Mn) and Aluminum (Al).</li> <li>• DNRECs Screening Levels (2013) for soil were exceeded for Arsenic(As), Lead (Pb), Iron (Fe), Mercury (Hg), Cadmium (Cd), Chromium (Cr), Copper (Cu) and Cyanide (CN).</li> <li>• DNRECs Screening Levels (2013) for groundwater were exceeded by Lead (Pb), Iron (Fe), Manganese (Mn), Aluminum (Al), Barium (Ba) and Chromium (Cr).</li> </ul>
<b><u>Elbert Park</u><sup>118</sup>  (Elbert Playground)</b>	<ul style="list-style-type: none"> <li>• EPAs RSLs were exceeded for Arsenic (As), Iron (Fe), Manganese (Mn), Vanadium (Va) Aluminum (Al), and Cobalt (Co),</li> <li>• EPAs DWMCL was exceeded for Manganese (Mn)</li> <li>• DNRECs Screening Levels (2013) for soil were exceeded for Arsenic (As).</li> <li>• DNRECs Screening Levels (2013) for groundwater were exceeded by Manganese (Mn).</li> </ul>
<b><u>Diamond State Foundry</u><sup>119</sup>  (Brandywine Park)</b>	<ul style="list-style-type: none"> <li>• EPAs RSLs were exceeded for Arsenic (As), Barium (Ba), Lead (Pb), Iron (Fe), Cadmium (Cd), Aluminum (Al), Copper (Cu), Cobalt (Co), Manganese (Mn), Mercury (Hg), Vanadium (V), and Zinc (Zn).</li> <li>• EPAS DWMCLs were exceeded for Iron (Fe), Lead (Pb), Aluminum (Al) and Manganese (Mn).</li> <li>• DNRECs Screening Levels (2013) for soil were also exceeded by Lead (Pb), Arsenic (As), Chromium (Cr), Barium (Ba), Cadmium (Cd), Copper (Cu), Cobalt (Co), Mercury (Hg) and Zinc (Zn) .</li> <li>• DNRECs Screening Levels (2013) for groundwater were exceeded by Iron (Fe), Lead (Pb), Aluminum (Al) and Manganese (Mn).</li> </ul>

The presence of contaminants in excess of federal and/or state screening standards may pose a threat to the health of surrounding communities. This is particularly the case with respect to vulnerable populations such as children and suggests the need for further analysis. Contaminants such as metals may impact human health both through high dose short-term exposure and through low dose long-term exposure (bio-accumulation). These contaminants can also lead to

<sup>117</sup> Site documents for E 7<sup>th</sup> St. Peninsula South:

<http://www.nav.dnrec.delaware.gov/DEN3/Detail/FacilityDetail.aspx?id=10056529&piid=27307>

See "SIRB Report-East 7th ST Peninsula-South,DE-1127" Document Date 1999.07.21 SIRB ID#: DE-1127.

<sup>118</sup> Site documents for Elbert Park:

<http://www.nav.dnrec.delaware.gov/DEN3/Detail/FacilityDetail.aspx?id=10057698&piid=28301>

See "SIRB Report Elbert Park DE-1327" Document Date: 2005.01.01 SIRB ID#: DE-1327.

<sup>119</sup> Site documents for Diamond State Foundry:

<http://www.nav.dnrec.delaware.gov/DEN3/Detail/FacilityDetail.aspx?id=10164087&piid=27306>

See "SIRB Report Diamond State Foundry/Pullman, Car Works, DE-1144" Document Date: 2000.01.09 SIRB ID#: DE-1144.



organ failure and some are also known as or suspected to be carcinogens. Tables 14, 15 and 16 provide a summary of selected soil contaminants from the three brownfield sites for which information is available: East 7<sup>th</sup> Street Peninsula South, Elbert Park, and Diamond State Foundry. In many cases, contaminant concentrations exceed both federal (EPA) and state (DNREC) risk-based screening levels.

**Table 14: East 7<sup>th</sup> Street Peninsula South Status (1999)**

Contaminant	Maximum Concentration In Soil	EPA Residential RBC		DNREC URS	
		Soil Screening Levels in ppm	Times Exceeded	Soil Screening Levels in ppm	Times Exceeded
Fe (Iron)	239,000 ppm	5,500 ppm	43.5X	74,767 ppm	3.2X
Pb (Lead)	3,840 ppm	400 ppm	9.6X	400 ppm	9.6X
As (Arsenic)	68 ppm	0.61 ppm	111.5X	11 ppm	6.2X
Cr (Chromium)	872 ppm	23 ppm	38X	214 ppm	4.1X
Ba (Barium)	N/A	1,500 ppm	N/A	1,500 ppm	N/A
Cd (Cadmium)	10.9 ppm	7 ppm	1.6X	7 ppm	1.6X
Al (Aluminum)	14,700 ppm	7,700 ppm	1.9X	51,200 ppm	Not exceeded
Cu (Copper)	764 ppm	310 ppm	2.5X	310 ppm	2.5X
Co (Cobalt)	30 ppm	2.3 ppm	13X	34 ppm	Not exceeded
Mn (Manganese)	1,240 ppm	180 ppm	6.9X	2,100 ppm	Not exceeded
Hg (Mercury)	17.6 ppm	1 ppm	17.6X	1 ppm	17.6X
V (Vanadium)	71.1 ppm	39 ppm	1.8X	134 ppm	Not exceeded
CN (Cyanide)	9.8 ppm	2.2 ppm	4.5X	4.7 ppm	2.1X
*EPA Residential RBC represents risk-based concentration levels					
**DNREC URS represents DNREC uniform risk-based remediation standards					

**Table 15: Elbert Park Status (2005)**

Contaminant	Maximum Concentration In Soil	EPA Residential RBC		DNREC URS	
		Soil Screening Levels in ppm	Times Exceeded	Soil Screening Levels in ppm	Times Exceeded
Fe (Iron)	30,800 ppm	5,500 ppm	5.6X	74,767 ppm	Not exceeded
As (Arsenic)	15.8 ppm	0.61 ppm	25.9X	11 ppm	1.4X
Al (Aluminum)	18,500 ppm	7,700 ppm	2.4X	51,200 ppm	Not exceeded
Co (Cobalt)	14 ppm	2.3 ppm	6.1X	34 ppm	Not exceeded
Mn (Manganese)	546 ppm	180 ppm	3X	2,100 ppm	Not exceeded
V (Vanadium)	48.5 ppm	39 ppm	1.2X	134 ppm	Not exceeded
*EPA Residential RBC represents risk-based concentration levels					
**DNREC URS represents DNREC uniform risk-based remediation standards					

**Table 16: Diamond State Foundry Status (2000)**

Contaminant	Maximum Concentration In Soil	EPA Residential RBC*		DNREC URS**	
		Soil Screening Levels in ppm	Times Exceeded	Soil Screening Levels in ppm	Times Exceeded
<b>Fe (Iron)</b>	65,900 ppm	5,500 ppm	12X	74,767 ppm	Not exceeded
<b>Pb (Lead)</b>	41,900 ppm	400 ppm	105X	400 ppm	105X
<b>As (Arsenic)</b>	72.4 ppm	0.61 ppm	119X	11 ppm	6.6X
<b>Cr (Chromium)</b>	317 ppm	23 ppm	14X	214 ppm	1.5X
<b>Ba (Barium)</b>	6,360 ppm	1,500 ppm	4.2X	1,500 ppm	4.2X
<b>Cd (Cadmium)</b>	25.5 ppm	7 ppm	3.6X	7 ppm	3.6X
<b>Al (Aluminum)</b>	17,800 ppm	7,700 ppm	2.3X	51,200 ppm	Not exceeded
<b>Cu (Copper)</b>	853 ppm	310 ppm	2.8X	310 ppm	2.8X
<b>Co (Cobalt)</b>	57.4 ppm	2.3 ppm	25X	34 ppm	1.7X
<b>Mn (Manganese)</b>	619 ppm	180 ppm	3.4X	2,100 ppm	Not exceeded
<b>Hg (Mercury)</b>	1.1 ppm	1 ppm	1.1X	1 ppm	1.1X
<b>V (Vanadium)</b>	87 ppm	39 ppm	2.2X	134 ppm	Not exceeded
<b>Zn (Zinc)</b>	18,900 ppm	2,300 ppm	8.2X	2,300 ppm	8.2X
*EPA Residential RBC represents risk-based concentration levels					
**DNREC URS represents DNREC uniform risk-based remediation standards					

Less information is available for the other three brownfield sites (Table 17). The 2013 Operations and Maintenance report for the Fort Christina Marina brownfields site notes soil and groundwater levels of a number of contaminants that exceed DNREC Screening Levels and by inference EPA Screening Levels. The concentration levels of the contaminants that exceed groundwater Screening Levels provided within the report, however, are incomplete. In addition, the appendices reveal concentrations of some contaminants that exceed DNREC groundwater Screening Levels but are not cited as contaminants of concern. No reason is provided for this within the documents. Table 16 offers more details.

The current status of the Eastside/South Wilmington and the Riverside brownfield sites is unknown. Phase I assessments were conducted at each site well over a decade ago. Although these sites remain listed as brownfields areas, no further documents are provided to demonstrate whether further testing has been conducted or the current status of these properties. Updates are needed to establish transparency with regards to these brownfields sites.

DNREC-SIRS is planning to take soil samples from all parks and recreational areas within Delaware's urban areas to test for polycyclic aromatic hydrocarbons (HAC 2013b). PAHs occur in fossil fuels and as a byproduct of their incomplete burning. They are persistent pollutants and are considered carcinogenic, can cause damage to organs and can lead to birth defects (EPA, 2008). This testing provides an opportunity for DNREC to perform a more comprehensive analysis of the aforementioned parks.

**Table 17: Incomplete/Unknown Status of Brownfields**

Brownfields/Parks	Incomplete/Unknown Status
<p><b>Fort Christina Marina<sup>120</sup></b></p> <p><b>Mayor John E. Babiarz Park</b></p>	<ul style="list-style-type: none"> <li>• Operation and Maintenance Report (2013) provides incomplete data.</li> <li>• DNRECs Screening Levels (2013) for the soil were exceeded by Arsenic (As) Iron (Fe) and Lead (Pb).</li> <li>• DNRECs Screening Levels (2013) for groundwater were exceeded by Arsenic (As), Lead (Pb), Iron (Fe) and Manganese (Mn) but data in the appendices provides incomplete information on the concentrations of these contaminants.</li> <li>• Although Mercury (Hg) and Cadmium (Cd) are present in excess of DNRECs groundwater screening levels they are not cited as contaminants of concern.</li> </ul>
<p><b>Eastside South<sup>121</sup></b></p> <p><b>Wilmington</b></p> <p><b>Barbara Hicks Playground</b></p>	<ul style="list-style-type: none"> <li>• Documents exist for Phase I but not Phase II assessments—it is unclear if Phase II soil and groundwater testing was ever conducted.</li> <li>• Although the site is still listed as a brownfields area the latest site assessment conducted is more than a decade old.</li> <li>• Documents are labeled in a manner that make it difficult to identify which ones would be relevant interest to a community member looking for data on contamination.</li> <li>• Existing site records only consist of assessment reports and communications between the city and private property owners or environmental consulting agencies.</li> </ul>
<p><b>Riverside<sup>122</sup></b></p> <p><b>Kruse Playground</b></p> <p><b>Kirkwood Park</b></p> <p><b>Brandywine Park</b></p> <p><b>Mayor John E. Babiarz Park</b></p>	<ul style="list-style-type: none"> <li>• Documents exist for Phase I but not Phase II assessments—it is unclear if Phase II soil and groundwater testing was ever conducted.</li> <li>• Although the site is still listed as a brownfields area the latest site assessment conducted is more than a decade old.</li> <li>• Documents are labeled in a manner that make it difficult to identify which ones would be relevant interest to a community member looking for data on contamination.</li> <li>• Existing site records only consist of assessment reports and communications between the city and private property owners or environmental consulting agencies.</li> </ul>

<sup>120</sup> Site documents for Fort Christina Marina:

<http://www.nav.dnrec.delaware.gov/DEN3/Detail/FacilityDetail.aspx?id=10024821>

See "Consultant Report Christina Marina DE-1293" Document Date: 2013.05.20 SIRB ID#: DE-1293.

<sup>121</sup> Site documents for Eastside South Wilmington:

<http://www.nav.dnrec.delaware.gov/DEN3/Detail/FacilityDetail.aspx?id=10056571&piid=27366>

<sup>122</sup> Site documents for Riverside:

<http://www.nav.dnrec.delaware.gov/DEN3/Detail/FacilityDetail.aspx?id=10056572&piid=27367>



## **VI. Conclusions and Recommendations**

Brownfields revitalization efforts within Delaware have primarily focused on economic redevelopment and have sought to measure success in those terms. Environmental justice, community participation and sustainable development have been viewed as secondary concerns. Efforts to integrate these broader concerns have been mixed and serious questions remain about the overall equity of Delaware's brownfields redevelopment activities.

The majority of the State's contaminated and at-risk sites are located in Wilmington. In addition to facing higher levels of environmental and health risks, brownfields residents in Wilmington, who are overwhelmingly minority, are confronted by: higher unemployment and poverty rates; lower income rates; higher crime and vacancy rates; lower owner-occupied housing rates; higher rates of children 5 years old and younger; lower rates of educational attainment; and lower rates of participation opportunity. This situation persists despite twenty years of brownfields efforts by the State.

What obstacles exist to addressing environmental justice, community participation and sustainable development in meaningful ways? What actions can the State of Delaware and the City of Wilmington take to ensure that these goals are better integrated into brownfields redevelopment? A brief overview of CEEP's research findings in analyzing 10 brownfields programs across the United States is provided. These findings will be used to guide CEEP's recommendations on overcoming obstacles and ensuring sustainable and just brownfields revitalization.

### **A. Overview of Case Study Research Findings**

Analysis of the brownfields programs in 10 cities recognized for their leadership on this issue found varying degrees of attention paid to addressing environmental justice, community participation and sustainable development concerns. This is partly due to vague initial directives from the federal brownfields program as well as incomplete oversight. Those programs that were most successful in emphasizing these goals were those that sought to integrate them into the brownfields revitalization process from the outset by addressing the needs and concerns of brownfields communities.

Those brownfields programs which were noteworthy among the case studies in achieving sustainable and just urban revitalization exhibited two common characteristics. A high level of coordination among different levels of government/agencies, nonprofit organizations and community groups throughout the brownfields process was one. The identification and leveraging of funding opportunities among multiple levels was another. Dedicated brownfields

personnel were often central to helping achieve high levels of coordination and securing a diversity of funding.

We came across different levels of community involvement among brownfields programs. Those that were most successful sought to overcome obstacles to community involvement by providing new opportunities to enhance the ability of community residents to take part in the brownfields program planning process. Resources and staff were dedicated to promoting community involvement. In some cases, funding was provided directly to community groups in order to facilitate community participation. Innovative mechanisms were created and often institutionalized in order to encourage community groups and residents to participate. Programs were also put in place to build the capacity of community residents for enhanced civic engagement.

Many brownfields programs among our case studies were concerned with the economic benefits of brownfields redevelopment in terms of increased tax revenues and job creation. Those that pursued environmental justice, community participation and sustainable development goals as part of a broader revitalization plan went beyond that and redefined “success” and “successful” redevelopment outcomes. They examined the direction of economic benefits as well as the environmental and social aspects of redevelopment activities in order to identify and implement projects to meet the needs of brownfields communities.

In order to target economic benefits and promote environmental and social aspects, brownfields programs adopted a number of strategies. The cities which were most effective in realizing these goals put in place formal procedures, rules and regulations to promote and evaluate them. For example, regulations were adopted to foster local job creation as a requirement of government assistance and job training programs were established for local residents. In order to address environmental aspects, assessment and cleanup of properties were prioritized on the basis of environmental health considerations rather than economic development potential. In order to address social aspects, rules were set up to encourage and in some cases mandate reuse options that were beneficial to the community.

Among our case studies, examination found varying degrees of access and transparency with regards to information on brownfields properties, particularly with respect to the environmental risks they may pose to community residents. Several case study cities helped promote community awareness, build community trust, and facilitate community involvement by providing a transparent flow of information from government entities to community residents in an easy-to-access and user-friendly manner.

## **B. Recommendations**

We have organized our recommendations for Delaware around our research findings with respect to the best practices of the case studies analyzed.

- 1. We recommend pro-active commitment by DNREC to the goals of environmental justice, community participation and sustainable development which takes into account the needs and concerns of affected communities.**
- 2. An explicit effort to pursue greater stakeholder coordination, more multi-source funding, and the dedication of personnel resources to brownfields revitalization are strongly encouraged.**
- 3. Delaware should consider specific actions to identify, recognize, and overcome the institutional and community obstacles to meaningful community participation such as brownfields opportunity programs (BOPs) and community benefit agreements (CBAs).**
- 4. The State should explore innovative mechanisms for educational support which can promote and sustain community participation throughout the brownfields program planning process.**
- 5. DNREC, DEDO and the City of Wilmington are encouraged to redefine programmatic “success” and “successful” redevelopment outcomes in a manner that adopts a broader view of brownfields revitalization to meet the needs of the affected communities.**
- 6. DNREC, DEDO and the City of Wilmington should explore procedures, rules and regulations to operationalize and evaluate the economic, environmental and social aspects of brownfields revitalization.**
- 7. DNREC, in particular, could consider ways to improve the transparent flow of information from government entities to community residents in an easy-to-access and user-friendly system which allows residents and businesses to make informed decisions while participating in the brownfields revitalization process. Our research suggests that greater transparency could be a key to overcoming the frustrations of brownfields communities.**





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## Appendix I

# Community Involvement Checklist for Brownfield Sites December 17, 2003

### Version 1

DNREC's mission is to protect human health and the environment. To achieve this mission, DNREC continues to integrate the knowledge and opinions of others into its decision making process. Effective public involvement improves the content of the Department's decisions while promoting democracy and building public trust in government.

Below are tactics you can implement that will promote opportunities for stakeholders to gain information about your project and provide you with feedback about their understanding of the implications of your actions to their community.

Involving the public early, and often, throughout the decision-making process ensures that your project has allowed DNREC to help stakeholders understand the scientific, financial and technical information relevant to any decision we have made on the project.

DNREC can help you develop an outreach program to gauge community support for your proposal and recommend outreach strategies to help you align your project with community needs and expectations.

DNREC also has resources available to help you identify local media, leaders of local community groups, civic associations and elected officials at the local and state levels.

#### **Recommended outreach tactics:**

- Community Advisory Group
  - Have you thought about sponsoring a forum through which broad segments of the community can present ideas and opinions? This is not a decision making body nor does it make decisions on project design and implementation.
- Community Events
  - Has your organization been properly introduced to the community? Have you attended activities in the community organized by existing groups with standing in the community?
- Community Groups Notification
  - Have you attempted to meet with existing civic and community organizations to introduce your project and your organization?
- Coordination for Local Government and Agencies

- Have you attempted to meet with local elected officials to introduce your project and your organization?
- E-mail
  - Do you have an e-mail address or a web site where concerned individuals can go to contact you or find out about your project or your organization's current or past projects and operations?
- Environmental Justice Activities
  - Does your project prevent minority and/or low income, and tribal communities from being subject to disproportionately high and adverse impacts?
- Fact Sheets
  - Have you developed reports, studies, plans, etc. related to controversial issues or significant decisions or timeframes related to your project that are written in a style and at a reading level that will be easily understood by the community?
- Information Repositories
  - Have you developed reports, studies, plans, etc. related to controversial issues or significant decisions or timeframes related to your project that are written in a style and at a reading level that will be easily understood by the community and placed in a location or locations convenient to the public?
- Mailing List
  - Have you developed a mailing list of stakeholders in proximity to your project that will allow you to communicate significant decisions or timeframes related to your project?
- Listserv
  - Do you have an e-mail broadcast capability that will allow you to communicate significant decisions or timeframes related to your project?
- Media Relations
  - If public relations is a significant strategy you are employing to gain acceptance for your project, are you aware of the media outlets that serve stakeholders in your project's proximity?
- Project Site Tour/Visit
  - If your site is safe to tour or visit, have you made an effort to present the site to the public or offered the public a chance to see what you are proposing?
- Public Meeting/Forums/Availability Sessions
  - Has your organization made itself available to the community to explain the impacts of your project on their community?
- Public Notices
  - Have you complied with the public notice requirements for any permits required to successfully complete your project?
- Public Television/Cable Access
  - If public relations is a significant strategy you are employing to gain acceptance for your project, are you aware of the public television or cable access stations that serve stakeholders in your project's proximity?
- Public Service Announcement

- If public relations is a significant strategy you are employing to gain acceptance for your project, are you aware of the local public affairs programs that serve stakeholders in your project's proximity?
- School/Education Outreach Activities
  - Does your project require that you provide outreach to the local school districts? Does your project impact children?
- Sponsorships (Neighborhood Athletic Teams/Recreation Programs)
  - Have you thought about sponsoring community activities or groups as a way of introducing yourself to the community and demonstrating an interest in community activities?
- Survey
  - Have you conducted a survey of the community to see if your project is one that the community will support or welcome?
- Technical Assistance Grant (TAG)
  - Have you offered to work with local civic and community groups to help them obtain a TAG grant to assist with technical questions they may have about your project?
- Technical Outreach Services for Communities (TOSC)
  - Have you offered to work with local civic and community groups to help them obtain a TOSC grant to assist with technical questions they may have about your project?
- Toll-free hotline
  - Is there a number that concerned citizens can call to get information about your project or to express concerns about your project?
- Video Production
  - Do you have a presentation that you are able to present at local community or civic group meetings?
- Visual Aides, Displays, and Events Outreach Materials
  - Have you developed presentation materials that your organization can use with elected officials, civic, or community groups?
- Web Site
  - Do you have an e-mail address or a web site where concerned individual's can go to contact you or find out about your project or your organizations current or past projects and operations.
- Workshops/Seminars
  - Has your organization offered to perform workshops or sponsor seminars to discuss your project with interested parties or project stakeholders?