Investing in Wisconsin’s Waterfront
An assessment of waterfront brownfields redevelopment in Wisconsin

Prepared for the Wisconsin Department of Natural Resources

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Workshop in Public Affairs
Spring 2016
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Foreword

This report is the result of collaboration between the Robert M. La Follette School of Public Affairs at the University of Wisconsin–Madison and the Wisconsin Department of Natural Resources (DNR). Our objective is to provide graduate students at La Follette the opportunity to improve their policy analysis skills while providing Wisconsin policymakers and practitioners an assessment of waterfront brownfields redevelopment in Wisconsin.

The La Follette School offers a two-year graduate program leading to a master’s degree in public affairs. Students study policy analysis and public management, and they can choose to pursue a concentration in a policy focus area. They spend the first year and a half of the program taking courses in which they develop the expertise needed to analyze public policies. The authors of this report all are in their final semester of their degree program and are enrolled in Public Affairs 869, Workshop in Public Affairs. Although acquiring a set of policy analysis skills is important, there is no substitute for actually doing policy analysis as a means of experiential learning. Public Affairs 869 gives graduate students that opportunity.

This year, Workshop students were divided into eight teams. Other teams completed projects for the City of Madison, the Wisconsin Department of Public Instruction and the Wisconsin Department of Children and Families; the Wisconsin Department of Health Services, Bureau of Assisted Living; the School of Medicine and Public Health at the University of Wisconsin–Madison; the Legal Assistance to Institutionalized Persons Project at the University of Wisconsin–Madison; the Millennium Challenge Corporation; and the University of Notre Dame Environmental Change Initiative.

Over the past 50 years, Wisconsin’s manufacturing industry has declined, and closing industrial facilities have often left behind contaminated sites, known as brownfields. Brownfields’ negative impacts range from reduced economic development opportunities, to lowered property values and tax revenue, to public health and safety threats. The report argues that waterfront brownfields are a pressing public problem; that investing in waterfront brownfields redevelopment presents an economically efficient possibility to spur growth in Wisconsin; and because of economic risk inherent in the redevelopment process, initializing efforts must come from the public sector. Based upon eight case studies from across the state and four from other states, the report finds three basic elements for overcoming redevelopment barriers: comprehensive and clear state support; public-private partnership organizations; and local leadership. The report recommends that the legislature pass the necessary enabling legislation for the DNR to create a waterfront-specific brownfields program. Once this program is created, it should undertake four initial tasks: create a toolkit of best practices for communities and developers interested in redeveloping their waterfronts; implement creative funding solutions to provide “seed” money for waterfront projects; generate a database of Wisconsin waterfront redevelopment “shovel-ready” projects; and begin collecting key metrics to perform a more precise cost-benefit and impact analysis of waterfront redevelopment.

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May 2016
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Acknowledgments

This project would not have been possible without the support of numerous individuals and organizations. Our final report is only the visible product of their assistance; the knowledge and insights they have shared with us go well beyond the printed page. First and foremost, we express our sincere appreciation to our client: the Wisconsin Department of Natural Resources. Without their experience, insight, and generous use of their time to review and comment on this document, our final report would not have been possible.

We also want to extend the deepest gratitude to all the developers and local public servants we interviewed for providing their valuable insights on how brownfields and waterfront redevelopment work in practice. This research was also made possible by a sub-licensing of the Infogroup database through the Business Dynamics Research Consortium (BDRC), a project of the University of Wisconsin Extension Division for Business and Entrepreneurship. We are incredibly grateful to UW–Extension for generously sharing the data.

We also thank our La Follette School colleagues, faculty, and staff who provided valuable feedback and encouragement and facilitated the capstone experience. Finally, we extend our gratitude to Professor Tim Smeeding for his guidance and mentorship throughout the semester.
Executive Summary

Over the past 50 years, Wisconsin’s manufacturing industry has declined, and closing industrial facilities have often left behind contaminated sites, known as brownfields. Brownfields’ negative impacts range from reduced economic development opportunities, to lowered property values and tax revenue, to public health and safety threats. Redevelopment of these sites is limited by their contamination, and redevelopment of sites along waterways is further complicated by a variety of additional regulations controlling waterfront development.

This report makes three basic points: First, waterfront brownfields are a pressing public problem resulting from changes in the Wisconsin economy over the last century; second, investing in waterfront brownfields redevelopment presents an economically efficient possibility to spur growth in Wisconsin for the years ahead; third, because of economic risk inherent in the redevelopment process, if the state wants to realize the benefits of waterfront brownfields, then effort must come from the public sector.

Waterfront brownfields are an opportunity for economic revitalization. The return on public investment for waterfronts is at least 2:1 and can be as high as 30:1. In flagship Wisconsin cases, every $1 of public investment yielded $4 of private funds and created over 5,000 jobs.

Development potential is limited by five challenges: 1) redevelopment is an economically risky process because of unknown contamination levels and costs; 2) public funds are limited and declining; 3) the public must balance growth and public health in redevelopment programs; 4) waterfronts amplify challenges with their scale and added regulations; and 5) institutional coordination and current regulatory context constrain policy innovation.

Based upon eight case studies from across the state and four from other states, we find three elements for overcoming these barriers: (1) comprehensive and clear state support; (2) public-private partnership organizations; and (3) local leadership.

In order to incentivize attainment of these best practices, we make five recommendations. First and foremost, we recommend that the Wisconsin Legislature draft and pass the necessary enabling legislation for the Wisconsin Department of Natural Resources (DNR) to create a waterfront-specific brownfields program within the agency’s Remediation and Redevelopment program. Once this program is created, we recommend four initial tasks: (1) create a toolkit of best practices for communities and developers interested in redeveloping their waterfronts; (2) implement creative funding solutions to provide “seed” money for waterfront projects; (3) generate a database of Wisconsin waterfront redevelopment “shovel-ready” projects; and (4) begin collecting key metrics to perform a more precise cost-benefit and impact analysis of waterfront redevelopment.
I. Introduction: Problems and Possibilities in the U.S. Heartland

As the U.S. economy has transformed over the last half-century, Wisconsin’s manufacturing industry and its jobs have declined across the state. This decline, and the loss of about 200,000 manufacturing jobs between 1998 and 2014, has resulted in the closure of factories and other industrial facilities (COWS, 2014). Contaminated industrial sites, known as brownfields, have become increasingly common as facilities close and companies choose not to invest in cleanup or redevelopment. As a result of brownfields’ perceived or real contamination, Wisconsin’s municipalities often struggle to overcome negative impacts at and near brownfields sites. These negative impacts can range from reduced economic development opportunities and underutilized infrastructure, to lowered property values and tax revenue, to public health and safety threats.

Many industrial sites were strategically located along the shores of Wisconsin’s many lakes and rivers. This means that many brownfields would be considered prime waterfront real estate if they were not potentially contaminated. Waterfront brownfields redevelopment presents an opportunity for communities to reinvest in their waterfront assets and improve the local economy: redevelopment can satisfy many stakeholder goals by cleaning up environmentally hazardous sites, putting unproductive land back to use, increasing property values and tax revenue, and creating local jobs (Lange, 2004). Many cities and states in the upper Midwest recognize this opportunity and have implemented brownfields programs over the past 20 years (US Conference of Mayors, 2006; Jones & Welsh, 2010). Wisconsin has been a nationally recognized leader for innovation in brownfields redevelopment (Wernstedt & Hersh, 2003). However, the potential benefits of waterfront-specific brownfields redevelopment in Wisconsin have been largely unrealized.

In this report, we investigate the potential value of and challenges to Wisconsin waterfront brownfields redevelopment. We find that waterfront brownfields redevelopment provides great benefits for communities both large and small, but redevelopment is limited due to risk inherent in the process. To reduce this risk, we recommend that the DNR ask the legislature to pass legislation enabling the creation of a waterfront-specific brownfields program within the DNR’s Remediation and Redevelopment program. Once this program is created, we recommend four initial tasks: (1) create a toolkit of best practices for communities and developers interested in redeveloping their waterfronts; (2) implement creative funding solutions to provide “seed” money for waterfront projects; (3) generate a database of Wisconsin waterfront redevelopment “shovel-ready” projects; and (4) begin collecting key metrics to perform a more precise cost-benefit and impact analysis of waterfront redevelopment.
II. Background: The Context of Waterfront Brownfields Remediation and Redevelopment

Brownfields Redevelopment in the United States

Brownfields are properties with real or perceived environmental contamination; they are a common problem in the United States. The U.S. Environmental Protection Agency (EPA) estimates that between 500,000 and 1 million brownfields sites exist in the United States. These sites represent public health hazards and lost economic potential (EPA, 2015). In Wisconsin, the DNR has overseen or conducted some type of environmental cleanup-related activity in 1,774 of the state’s 1,851 municipalities (Brownfields Study Group, 2015). While most brownfields sites are concentrated in former industrial districts, brownfields are not exclusive to urban areas (Hersh & Wernstedt, 2003). However, urban areas are the greatest users and recipients of brownfields funding. Former manufacturing hubs often have a much higher concentration of brownfields, and such communities demonstrate increased capacity to apply for federal supporting grants (Greenberg & Issa, 2005). In Wisconsin, 20% of brownfields projects are located in the Milwaukee metropolitan area (Wernstedt & Hersh, 2003). A more detailed discussion of the historical context of brownfields redevelopment can be found in Appendix A.

At the federal level, the EPA provides support for brownfields remediation and restoration. The agency offers funding and support for city-, state-, and county-level brownfields initiatives. As of 2006, the EPA had awarded 800 assessment grants totaling $225 million, 202 revolving loan fund grants totaling $186.7 million, and 238 cleanup grants totaling $42.7 million (EPA, 2006). This grant funding had leveraged approximately $8.5 billion in private investment and created over 39,000 jobs (EPA, 2006). In recent years, the EPA’s budget has been declining overall, causing a decline in the brownfields grants program from $225 million in 2006 to $100 million in 2015 (EPA, 2015). This decline means that states and municipalities increasingly must find innovative methods to promote brownfields redevelopment. Although the impacts of brownfields redevelopment are site-specific and depend on the site’s contamination and use after redevelopment, a survey of over 200 American cities estimated that over 500,000 new jobs and almost $2.5 billion in local tax revenue would result from brownfields redevelopment (US Conference of Mayors, 2000).

Brownfields Redevelopment in Wisconsin

Wisconsin has been a national leader in brownfields redevelopment since it passed the Land Recycling Law in 1994.1 The state was one of the first with such a law and, since then, Wisconsin’s remediation and redevelopment program has become a commonly cited brownfields model (e.g. Hersh and Wernstedt, 2003; DeSousa, 2009). The program has provided grants totaling $121.5

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1 Wisconsin’s legal definition of brownfields (S 560.13) differs slightly from the federal definition. It includes “abandoned, idle or underused industrial or commercial facilities or sites, the expansion or redevelopment of which is adversely affected by actual or perceived environmental contamination.”
million, with an estimated $7 to $19.99 of private money leveraged for every $1 of state investment, and one job leveraged for every $3,000 invested (Brownfields Study Group, 2015; Kashian and Paull, 2015). Even by the most conservative estimate, these ratios are almost three times the national average of leveraged private funds calculated by EPA (EPA, 2006). Wisconsin is also home to exemplary larger and smaller brownfields redevelopment projects, such as the Menomonee River Valley Project in Milwaukee and the National Brewery Museum in Potosi.

While Wisconsin’s Brownfields Program has achieved many successes, it has room to grow. A 2003 survey found seven important challenges for DNR oversight of brownfields remediation and redevelopment. These included persistent issues with interagency coordinating, political pressure, and insufficient funding (Wernstedt and Hersh, 2003). In fact, 58% of survey respondents ranked scarce funding as an important or very important constraint for brownfields development (Wernstedt and Hersh, 2003). This indicates that funding is the largest barrier for Wisconsin redevelopment efforts to overcome. State funding for brownfields redevelopment has declined by 35.9% since 2003, exacerbating the issue of funding for the program (Frank, 2014). While a substantial increase in funding would assist in brownfields redevelopment, such an increase is unlikely in the near future. This only increases the importance of wise public investments to leverage greater private investment.

Policy Challenges for Wisconsin Waterfront Brownfields Redevelopment

Wisconsin has had a number of notable successes with waterfront brownfields redevelopment, examples include Milwaukee’s Menomonee River Valley development and Appleton’s RiverHeath development. However, much waterfront remediation and redevelopment potential remains untapped. A strong demand for redevelopment exists: many large- and medium-sized communities, including Janesville, Wausau, Green Bay, along with over 60 others have written waterfront redevelopment plans. Yet, implementation of these plans remains slow due to five factors: (1) economic risk in redevelopment; (2) limited redevelopment funding; (3) the need to balance public health and economic development; 4) the unique challenges of redeveloping waterfronts; and (5) a lack of a waterfront-specific program within the Wisconsin DNR’s Remediation and Redevelopment program. Each of these challenges will be discussed in depth later in this report.

Challenge 1: Economic Risk

Even after state and federal reforms in liability and risk insurance to incentivize brownfields redevelopment, the risk of unrecovered high cleanup costs persists. Often these risks are more perceived than real on the part of developers, but they nonetheless pose a challenge for redevelopment (Alberini et al, 2003). Moreover, developers must be able to economically justify the time and staffing costs of going through a lengthy approval process to develop and remediate

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2 As one interviewee observed, residential developments, which have the highest return on developers’ investments, also have stringent cleanup requirements to preserve public health. These increase costs and lower the competitiveness of brownfields sites relative to greenfield sites.
contaminated land. This perceived risk is less of a concern for veteran brownfields redevelopers, who understand the requirements they must meet. However, these risks can represent a significant impediment for developers who have never undertaken such projects (Alberini et al, 2003).

**Challenge 2: Limited Funding**

Due to declining levels of state and federal funding, the majority of public redevelopment funding now comes from local governments. While municipalities and the state invest in waterfront redevelopment, reductions in financing and staff resources require a careful and strategic approach to ensure these resources leverage the greatest amount of private investment. Although there are a number of creative funding options, like Tax Incremental Financing (TIF), brownfields grants, statewide funds, and public-private partnerships, each by itself is insufficient to yield successful waterfront brownfields redevelopments (Wernstedt and Hersh, 2003; DeSousa, 2011). The most critical funding needed is pre-development funds. These are used for site assessment and often initial stages of cleanup, to ensure that developers can break ground sooner and incur less risk (Keyes, 2016).

**Challenge 3: Public Health and Remediation**

Additional challenges arise from the institutional coordination necessary to balance public health and local development (Wernstedt and Hersh, 2003). Many of these challenges emerge from uncertainties about contamination and remediation costs as well potential market limitations that arise from low surrounding property values (Kashian and Paull, 2015). Developers commonly voice concerns about these challenges in terms of liability: because other states approach brownfields contamination liability differently, some developers perceive Wisconsin’s requirements to be too stringent. In Wisconsin, property owners are responsible for pollution cleanup, even if they did not cause it (Wernstedt and Hersh, 2003). However, contamination of the land is reflected in the market price, encouraging sellers to engage in remediation, or sell their land at a discount to account for unperformed remediation. Other states have less stringent liability provisions that do not hold current land owners responsible but also provide large government cleanup funds. Wisconsin’s provisions maintain public health and require the developer, rather than the public, to pay for remediation. While liability provisions exist for good reason, they also can act as a disincentive to brownfields redevelopment.

**Challenge 4: Waterfront-Specific Characteristics**

Waterfront brownfields redevelopment amplifies brownfields challenges by requiring coordination between different levels of government to plan the remediation and redevelopment of multiple brownfields sites in an area. This challenge emerges from the tendency of waterfront redevelopments to be comprehensive; frequently, because of economies of scale, whole segments of waterfronts are redeveloped as opposed to single sites. Waterfront projects involving multiple properties, corresponding with costs ranging from $10 to $250 million, tend to have a greater chance of succeeding (Hersh, 2012).
Waterfront brownfields sites also have added risk to developers because of scientific uncertainty surrounding hydrology as well as contamination; the legal difference between soil and sediment, for example, has the potential to trigger additional permitting requirements (Hersh, 2012). Moreover, there are issues in determining background contamination levels for the multiple sites implicated in waterfront redevelopment (Frank, 2016).

Additionally, waterfront brownfields are more stringently regulated to maintain public health than normal brownfields: if contamination impacts water, it is subject to Clean Water Act permitting for discharge and filling (DNR, 2015). Sites are also subject to Chapter 30 of Wisconsin State Statutes, the Public Trust Doctrine which authorizes the DNR to intervene to protect public access to quality water on private sites (DNR, 2013). In net, the addition of waterfront redevelopments and brownfields results in increased funding requirements, economic risks, and involved stakeholders, but if done right it also increases the economic, social, and environmental returns (Hersh, 2012).

**Challenge 5: Institutional Flexibility and Coordination**

Institutional coordination is one of the best practices for realizing waterfront brownfields redevelopment projects (Hersh, 2012). Such coordination is a persistent administrative challenge, especially within Wisconsin’s current regulatory context. Act 21 was passed by the Wisconsin Legislature in 2011 and limited the way administrators in public agencies can regulate and interpret laws (State Bar of Wisconsin 2011). Historically, agencies have been able to interpret the meaning of rules and legislation with the goal of carrying out the spirit of the rule. Act 21 changed this practice by requiring agencies to act only based upon the often much narrower, explicit language of the rule or legislation (State Bar of Wisconsin 2011); an agency cannot impose a requirement, standard, or rule not explicitly permitted in legislation. Agencies may not even draft a rule unless approved to do so by the governor (State Bar of Wisconsin 2011).

Because of Act 21, the DNR has been unable to establish a waterfront brownfields redevelopment program to assist in solving the four aforementioned challenges because a mandate to do so has not been written into statute. Even if the DNR were permitted to create a waterfront brownfields program, resources, governance, and technical support would be needed from other agencies such as the Wisconsin Economic Development Corporation (WEDC). Successful brownfields redevelopment also requires institutional coordination between municipal governments that drive redevelopment planning and state and federal governments that assist (Wernstedt and Hersh, 2003).

**III. Questions, Methods, and Data**

**Research Questions**

In this report, we are guided by an overall question: what are the potentials and limits to waterfront brownfields redevelopment in Wisconsin? Answering this requires us to ask three specific
questions: (1) What is the economic benefit for municipalities and the state of Wisconsin if an investment is made to support waterfront brownfields restoration and redevelopment? (2) What are the key barriers and challenges facing successful implementation of waterfront revitalization efforts? (3) What resources or policies are needed to remove barriers and challenges, and how have specific communities and states done so to maximize the economic benefits and return on investment of redevelopment?

Methodology

In order to assess the untapped potential of waterfront brownfields redevelopment in Wisconsin, we conducted a mixed-methods analysis, consisting of: (1) a series of five case studies of waterfront brownfields redevelopment projects from across Wisconsin that are largely drawn from published results and semistructured interviews with key contacts; and (2) an analysis of business and job growth to assess the untapped potential in waterfront brownfields redevelopment.

The Case Study Approach

Brownfields redevelopment is a local issue. Because of this, the cost of redevelopment, public and private financing options, and economic benefits all depend upon the size and preferences of the local community. Due to the variability between redevelopment projects, we determined a case study approach would be most useful for decision-makers and developers interested in tapping into the economic potential of waterfront redevelopment on brownfields sites. When choosing redevelopment projects, we sought to provide the most representative sample possible. The case studies focus on projects often regarded as successful as well as those that have encountered challenges in implementation, projects on the shores of the Great Lakes and on rivers through the state, projects located in urbanized communities and in suburban and rural areas.

The case studies employ a mixed-methods approach. We use data from published redevelopment plans, progress reports, and media coverage along with data gathered from interviews with local contacts involved in implementing projects. In each case, we emphasize the process and timeline of the redevelopment project and the challenges and opportunities faced at each step along the way. In addition, where such data exist, we quantify the economic benefits and return on investment for the project alongside qualitative reports on benefits to the local community and the state. We evaluate projects in Appleton, La Crosse, Racine, Sheboygan, and Milwaukee.

We employed a semistructured interview methodology for each participant. This methodology entailed: (1) a set of broadly defined questions about each informant’s background, interest, and involvement in and visions for waterfront brownfields redevelopment in the state; (2) a set of role-specific questions for developers, local government employees, and researchers; and (3) questions

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3 Redevelopment plans in rural Wisconsin are difficult to locate and investigate due to the significant investment required and a lack of resources in smaller villages and towns.
that built off each informant’s responses but were not structured in advance. A copy of the structured interview questionnaires can be found in Appendix B.

**Economic Analysis of Waterfront Brownfields Redevelopment**

The University of Wisconsin–Extension’s Division of Business and Entrepreneurship aggregated the total number of establishments, defined in the data section, and the total number of jobs at the national, state, and municipal levels. The UW–Extension provided a proprietary dataset for the rough geographic areas, delineated by ZIP codes. We entered this data into ArcGIS and searched for businesses lying only within the boundaries of the eight case study waterfront redevelopment districts. District boundaries were drawn from the maps provided in the published waterfront redevelopment plans.

The total establishments and jobs were also aggregated, following which a percent-change analysis was conducted at the U.S., state, municipal, and district levels. To calculate the percent change, every year with available data was labeled $n = \{1995, 2015\}$, $E_n =$ number of establishments in year $n$, and $J_n =$ number of jobs in year $n$. The percent change for a given year, $P_{En}$, is then defined as $P_{En} = (E_n-E_{n-1})/E_{n-1}$, and the percent change in jobs for a given year $P_{Jn} = (J_n-J_{n-1})/J_{n-1}$. This analysis revealed trends in economic growth that were partially interpreted based on the results of interviews.

In addition to addressing challenges with the scale of the data, a percent-change approach better illustrates economic growth trends over time. This analysis was conducted initially for all eight case studies and then narrowed to the five communities where interviews provided insight into some of the reasons behind unexpected trends in growth and decline. In order to gain a more in-depth understanding of the economic changes within each district, we also provide a breakdown by industry, based on the North American Industry Classification System (NAICS) codes for each establishment.

**Data Sources**

Because we utilize a mixed-methods approach, we incorporate numerous sources of data into our overall assessment. These data are not divided into qualitative versus quantitative because many resources we accessed provided a mixture of the two. We focus on data sources, instead of characteristics, below.

**Interviews with Key Stakeholders**

We conducted 20 key-informant interviews to gain insight into complexities surrounding waterfront brownfields redevelopment. Interview subjects were selected based upon their involvement with the Brownfields Study Group, waterfront and/or brownfields redevelopment, or economic research in Wisconsin. Each interview was recorded. We examined key findings and understandings of the waterfront redevelopment process in conjunction with other data sources.
**Published Project Reports**

We mined project plans and reports for information about stages of the waterfront redevelopment projects, including redevelopment planning, brownfields assessment and remediation, challenges and sources of funding, and intended uses. Some benefits of redevelopment are difficult to quantify and are descriptively incorporated into this analysis. More information on these metrics can be found in the Limitations section. We draw much of our quantitative data from published reports, plans, and media coverage, in addition to using these sources’ qualitative descriptions. This method of data collection is less reliable, due to the variations in data collected, report methodologies, and the timing of projects and analyses.

**Establishment and Employment Data**

The data set used for quantitative analysis, percent change in businesses and employment as well as employment by industry, was made available to us through the UW–Extension. This proprietary data set tracked the number of “establishments,” defined as an entity employing one or more people, as well as the number of employees, the size of the business, sales, NAICS code, and whether the business was a start-up or a branch office. To draw a realistic trend of business and employment growth over the years for this analysis, we used only the number of employees and the NAICS codes.

This data set was compiled for us using the ZIP codes within the redevelopment districts and ultimately tracked about 90,000 businesses within the case study municipalities from 1997-2015. Comparison growth trends for the United States, Wisconsin, and the municipality were drawn from the publicly available aggregated data published at YourEconomy.com, which was available for 1995-2013. For this reason, the data set was narrowed to 1997-2013 for the percent-change analysis.

**Assumptions**

We approach these analyses with three key assumptions. First and foremost, we assume that waterfront brownfields redevelopment produces economic benefits that can be quantified. A review of available literature shows large variation in the costs, benefits, and returns on investment. Yet, we found the smallest return on investment quantified in Wisconsin is a $2 benefit per dollar invested; the largest is $16 or more per dollar invested. Given this information, we assume the economic benefits of redevelopment exceed the costs, but vary depending upon the specific redevelopment project.

For our results and recommendations, we acknowledge the limitations on public resources but assume that all communities considering redevelopment projects have access to a key set of assets. These particularly include support from the municipality and the larger community; a clear idea of the area they want to redevelop; and a plan for what to do with the district (i.e. mixed use, residential, commercial). The elements we assume these communities still need are seed money;
site assessment and remediation; developers and investors to catalyze redevelopment; and businesses to attract to the area.

While we assume the interviews we conducted provided vital information, we acknowledge they may represent interviewee biases. For instance, an agency representative or a researcher will likely seek to balance all of the needs of stakeholders and will incorporate externalities and public welfare in explaining the issues; while a developer, city planner, or environmental advocate will have a specific focus that will come through in the conversation. While this could potentially skew our research results, we conducted a number of interviews across a variety of stakeholders to counteract bias.

Limitations

We recognize three initial potential limitations of our assessment of business and job growth. First, the data for 2014-2015 had not yet been verified. For this reason, we did not include it in our percent-change analysis of the redevelopment district. Second, we found that in mapping the ZIP codes located within the business districts, some of the ZIP codes had changed over time. This indicates that some businesses no longer in existence may have been excluded from our analysis if they once fell within a ZIP code that no longer exists or now lies outside of the district.

The use of latitude and longitude as well as shape files in ArcGIS to determine which businesses fell within the boundaries of the redevelopment district may have yielded a small amount of error as well. In one or two cases, the latitude/longitude margin of error (usually accurate to within 15-20 feet) may have impacted the businesses close to the boundary lines, resulting in a very slight potential for inaccurate inclusion or exclusion of a handful of businesses. However, given the accuracy of latitude and longitude in most instances, the care we took in defining the boundaries of the redevelopment district, and the extremely low proportion of businesses that may have been impacted, we believe this error to be largely negligible for the purposes of this report.

A lack of full knowledge on all of the economic conditions leading to surges and losses in the creation of businesses and jobs could also lead to an overestimation of the growth potential illustrated. For that reason, our analysis presents the information and provides some explanation, but it does not attempt to over-assert this potential. Obvious declines can be seen in 2008-2009, during the economic recession, but additional periods marked by losses could simply be indicative of the preliminary stages of redevelopment rather than an indication of economic downturns. Some correlations were revealed, indicating a good deal of potential economic growth stemming from the waterfront redevelopment, but this analysis is not robust enough to demonstrate causation or indicate what proportion of growth can be attributed to the redevelopment.
Some additional limitations to our analysis are listed below. These limitations fall into one of two categories: (1) limitations due to the complexity of waterfront redevelopment; and (2) limitations that can be addressed in future research, given sufficient time and data.

**Complexity of Waterfront Redevelopment**

Unlike the assessment of a single brownfields redevelopment, waterfront redevelopment projects usually involve multiple sites. They also involve multiple uses that need to be addressed, including transportation, ports and marinas, infrastructure such as sea walls, and an increased need for caution in redevelopment to avoid contaminating water resources (Hersh, 2012). Each project will be unique, with a variety of sites involved, contamination to address, future uses, and community features such as trails, open space, and public access to the waterfront. These multiple considerations drive an increase in administrative oversight from a host of funding and permitting agencies at local, state, and even federal levels.

Some of the sites are likely to be brownfields due to the prevalence of waterfront industry in Wisconsin’s past, but other sites will not require such specific and potentially costly environmental remediation. In addition, the costs will be largely dependent on the future use intended for the site. Contaminated soils can be capped for sites that will be redeveloped for industrial or commercial purposes, while more extensive remediation will be required for residential redevelopment (Keyes, 2016). For these reasons, costs are difficult to estimate without some initial assessment and investment in the project.

Benefits, likewise, require some level of planning to estimate. Many of the benefits of waterfront redevelopment are difficult to quantify, including environmental benefits, decreases in public health risks, increases in quality of life and community pride, and attractiveness to other investors who may become more willing to invest in the community. Many waterfront redevelopments are mixed-use, involving business, recreational, and residential uses, which requires extensive planning and makes the differing benefits difficult to calculate in a systematic manner. The key implication of the variety of approaches to planning and redevelopment is that benefits vary on a case-by-case basis.

The timeline for redevelopment in a larger waterfront area is longer than for a single site. For this reason, funding must be strategically used so that it does not run out before the end of the project. The lengthier timeline also makes it difficult to assess the true costs and benefits within a short time frame. Larger projects will often be broken into phases, and while the costs are largely incurred at the beginning, it can take years before the benefits begin to accumulate and even longer before the project reveals its full economic potential. For example, planning for the Menomonee Valley project began in the late 1990s, and in 2014 several brownfields sites (approximately 75 to 100 acres) still needed to be remediated and redeveloped (Peterangelo & Henken, 2014).
The site-specific quality of waterfront redevelopment, which varies in accordance with local community wants and needs, means that developing a “one-size-fits-all” approach to redevelopment or assessment conceals more than it reveals. This variation also makes comparisons between waterfront redevelopments far more difficult. Each redevelopment has different goals, timelines, and end uses, making it unadvisable to draw generalizations from any single case study.

Our intention was to provide a cost-benefit analysis and estimated return on investment, but nearly every project we analyzed was yet to reach completion. For this reason, an economic analysis would be premature and may provide a skewed assessment that does not reflect the true benefits of the projects. It is prudent to give the projects time to reach fruition before such an analysis is conducted.

**Future Research and Analyses**

In the course of our research, we found numerous data resources that could have been very helpful had they provided more detail. However, most of this data is aggregated at the state or national level, and the smallest unit represented is the municipality or the county. For the purposes of this analysis, such data was not sufficient for us to draw meaningful conclusions regarding the economic potential of waterfront redevelopment.

The need for micro-level data was best illustrated in the Public Policy Forum’s report on the Menomonee Valley redevelopment project (c.f. Peterangelo and Henken, 2014). The analysis showed that while the city of Milwaukee gained only 872 jobs from 2002-2011, the Menomonee Valley redevelopment district added 3,244 jobs through the same time period. Had it not been for the redevelopment, the city as a whole may have shown job losses instead of gains.

Important potential sources of data that we wanted to incorporate and that could be the subject of future research include property values, tax revenue, wages, and out-of district impacts.

1. **Property values**: Due to the long timeline of the redevelopment projects, we would have needed a decade or more of data to show the true gains. However, only the last five years of data are publicly available for most Wisconsin communities. Data is often not available for every year. For example, in data for Wausau, properties were assessed every decade and usually not in the same years. Long-term, annual data would be needed for a meaningful future analysis.

2. **Tax revenue**: The Wisconsin Department of Revenue maintains records on tax revenue aggregated at the municipal level, but more detailed, micro-level data is not currently publicly available. Such data—as well as data on the tax revenue not collected due to TIF or other tax abatement policies—would be necessary for future analyses of tax revenue to the state and municipality.
3. **Wages**: Like tax data, we were able to attain wage information only at the city level, not at the business level within the redevelopment districts. Wage data may be challenging to obtain, due to confidentiality requirements, but a partnership with an organization such as the Department of Workforce Development may yield the necessary information for future research.

4. **Impacts that resonate outside of the district**: Our analysis targeted the business and job growth within specified districts, but such growth may radiate to the neighborhoods surrounding the redevelopment and to the broader community (see Appendix C for a discussion of neighborhood effects). Future analysis could focus on isolating these impacts from other economic development activities.

**IV. Analyzing the Potential for Waterfront Brownfields Redevelopment**

In the following section, we examine case studies of waterfront brownfields redevelopment from across the United States and Wisconsin to inform our policy analysis. We examine two statewide programs from the Great Lakes – New York and Ohio – and two cases from cities in the region – Pittsburgh and Minneapolis. For each state comparison, we provide a description of successful programmatic elements along with key impact metrics. We then analyze five Wisconsin cases of waterfront brownfields redevelopment in depth: Appleton, La Crosse, Milwaukee, Sheboygan, and Racine. For each community’s waterfront redevelopment, we provide project timelines, outcomes, economic analysis, and best practices.

We found major economic benefits to engaging in waterfront brownfields remediation and redevelopment. Many Great Lakes states and cities have implemented successful programs that leverage substantial private investment, from a minimum of $2 to a maximum of $16 of private money for every dollar of public investment. In the existing sites and regions of waterfront brownfields redevelopment in Wisconsin, this is also the case. In all cases, the return on public investment was at least a ratio of 2:1, and frequently it was greater. Moreover, municipal governments were able to see benefits through increased tax revenue. This was especially the case for ambitious multi-site redevelopments such as those in Appleton and Milwaukee, which tended to have higher up-front costs and longer planning periods. We find that waterfront redevelopment might create jobs, although clear trends have not yet appeared in the data.

From our analysis, we determine three best practices in waterfront brownfields remediation and redevelopment: (1) strong leadership and planning matters to realize redevelopment benefits; (2) public-private partnerships are integral to successful projects; (3) public funding early in the remediation process is key for reducing risk and increasing the likelihood of success. We discuss these findings in greater depth in Section 5.
Review of Successful Programs: Waterfront brownfields redevelopment in Great Lakes states

**New York State: Brownfields and Waterfront Programming**

In New York, state-led programs have been successful at incentivizing redevelopment on urban and rural waterfronts by providing funding and technical support to communities and developers (NYSDEC, 2006). The state does this through an array of brownfields and waterfront programs. New York State has three main elements to its brownfields programming: (1) an Environmental Restoration Program; (2) a Brownfields Cleanup Program; and (3) a Brownfields Opportunity Areas Program (NYSDEC, 2006). Moreover, 90% of the state’s population lives in urban areas along waterfronts, putting many post-industrial brownfields near water (NWWN, 2015).

Each of New York’s programmatic elements was designed to serve different purposes. The Environmental Restoration and Brownfields Opportunity Areas Programs were designed to assist brownfields redevelopment at the municipal level (NYSDEC, 2016). The Environmental Restoration Program reimburses communities for up to 100% of on-site and 90% of off-site remediation costs and helps in the planning phase of these stages of redevelopment (NYSDEC, 2006). The Brownfields Opportunity Areas Program provides communities technical knowledge and support in the implementation and planning stage of development on a brownfield (NYSDEC, 2016). These programs are funded by the state through tax-financing and specific accounts such as the Hazardous Waste Remediation Oversight and Assistance Account (DiNapoli, 2013).

The Brownfields Cleanup Program is designed specifically to engage the private sector in brownfields redevelopment. The program allows for different regulatory pathways for different levels of contamination (NYSDEC, 2006). For example, developers of lightly contaminated sites may be released of all liability if they develop the property and waive tax-credit financing (NYSDEC, 2015). For more contaminated sites, the state allows reduced cleanup standards if the private developer performs the investigation, design, and remediation and installs engineering controls on the property (Rizzo, 2005).

New York has also taken steps to revitalize waterfronts in the state. The Coastal Management Program, created in 1982, is used to encourage comprehensive land- and water-use plans for municipalities in the form of its Local Waterfront Revitalization Program (NWWN, 2015). This program provides technical and financial assistance for communities on up to 50% of a development’s cost (Office of Coastal Zone Management, 1982). New York City partnered with the state to develop the Comprehensive Waterfront Plan in 1992. This plan included a complete inventory of the city’s waterfront properties, so that it might shape future developments (NY Department of State, 2016). Since 1994, the program has awarded 140 awards for projects in the city and invested more than $49 million in waterfront redevelopment (NY Department of State,
The state’s Coastal Management Program, with assistance from municipal partners, has also invested more than $320 million through the Environmental Protection Fund (NWWN, 2015). This fund provides communities with a broad framework to plan waterfront redevelopments and receive assistance in implementing their projects.

**Key Lessons**

Two main lessons can be drawn from New York’s redevelopment programs. First, state funding and technical assistance for municipalities and developers can help redevelopment by reducing the risk associated with assessment, cleanup, and planning of sites. Second, partnerships between public and private entities are important for relieving the financial burden on a single party and increasing developer interest in economically investing in the location.

**Ohio: The Clean Ohio Fund and Brownfields Database**

Through large public investment and creative funding sources Ohio has been able to spur redevelopment on contaminated sites. This push has yielded thousands of jobs for the state along with billions of dollars of economic growth. In 2002, Ohio made a large effort to improve the environment and spur economic growth using the state’s large inventory of brownfields sites. The state’s most successful policy innovation to incentivize brownfields redevelopment has been the Clean Ohio Fund. This fund protecting natural areas and revitalizing urban areas began in 2000 as a voter authorized expenditure from liquor-tax revenue (Ohio EPA, 2000). From 2002 through 2013, the state allocated roughly $400 million as a section of the Clean Ohio Fund for the assessment, cleanup, and redevelopment of 386 sites across 127 communities (Clean Ohio Fund, 2015). Voters decided to continue the program in 2008 along with increasing the amount of the bonds that could be allocated (Ohio AIA, 2011).

Through this fund, public investments spurred economic growth in Ohio. The state has leveraged more than $4 billion from the $400 million invested leading to a return on investment of 10:1. The redevelopments have also created 9,197 jobs, the majority of which are commercial, retail, and office jobs (Development Services Agency, 2014).

Ohio has made the process of finding and preparing for a brownfields site easier since the fund’s inception. The state created an inventory of brownfields sites across the state with contact information, location, photographs, and prior use of the site in a simple-to-use program online (i.e. Ohio Brownfields Inventory, 2016). The inventory is not comprehensive, as owners of a brownfields site are not required to register. However, because the site connects private brownfields to potential buyers, registration is incentivized. The state also provides multiple online resources to guide developers through the process of brownfields redevelopment. These resources detail where brownfields are, how much money can be given in the form of grants for assessment and cleanup, how to finance a project through taxes, and what regulations must be met (Development Services Agency, 2016).
Key Lessons
Three lessons can be learned from Ohio’s brownfields programs. First, public funding is a powerful tool to promote redevelopment. The financial risks of assessing and cleaning a contaminated site are substantial, so providing resources to clean these properties increases interest for developers. Second, creativity with funding sources can increase the feasibility of redeveloping brownfields. Ohio’s use of liquor-tax revenue to support the revitalization of urban areas and protection of natural areas was popular with voters and assisted with the fund’s feasibility. Third, creating a database of development-ready brownfields locations can increase certainty for developers and, in some situations, provide background contamination information about the site.

Pennsylvania: Pittsburgh Waterfront Redevelopment
Since the decline of the U.S. steel industry, Pittsburgh has undertaken waterfront brownfields redevelopment efforts. Waterfront property remediation and redevelopment has provided substantial benefits for the city through thousands of new jobs and increased land values in neighborhoods around former waterfront brownfields.

The city's riverfront is linked through the Three Rivers Park, a 13-mile interconnected park system. It took 15 years and $128 million of public investment to convert steel mills and rail yards into parks, but Pittsburgh's efforts have paid off. An analysis of the park's effects estimated the parks catalyzed $2.6 billion in waterfront redevelopment. This represents a ratio of 20:1 for private funds leveraged by public funds (Riverlife, 2015).

Part of the park system's estimated benefit came from the Southside Works, a mixed-use development located on the riverside site of a former steel mill. The 123-acre plant was acquired by Pittsburgh's redevelopment authority in 1993, and remediation and redevelopment were completed in the late 2000s. The project took a combined $450 million in public and private investment. Since completion, the project is estimated to have created 5,400 jobs, and real estate prices in properties surrounding the site rose 160% between 2000 and 2009, compared to a city average of 18% in the same time period (Urban Redevelopment Authority of Pittsburgh, 2009).

Key lessons:
Pittsburgh’s experience presents three key lessons. First, public investment in parks and green space as part of the remediation and redevelopment process can have significant positive benefits. Second, the project demonstrates the importance of public-private partnerships. The Southside Works was possible because of a formal partnership between the city and private firms like the Pittsburgh Steelers and the nonprofit sector, such as the University of Pittsburgh Medical Center who came together to build a new sports medicine complex anchoring part of the development. Third, Pittsburgh's experience demonstrates the great social value of a waterfront brownfields redevelopment. Its remediation and use of existing brownfields, and return on investment of 20:1
makes it a good potential model for post-industrial urban areas in Wisconsin. Pittsburgh shows that when it comes to redevelopment, it pays for larger cities to dream big.

**Minnesota: Minneapolis Waterfront Redevelopment**

Minneapolis has varying levels of success when it comes to waterfront brownfields redevelopment. Its Central Riverfront area neighboring the downtown, and home to many of the city's now-unused mills, has been a major driver for growth near the central business district. Further upstream, however, redevelopment efforts have stalled.

The Central Riverfront area exemplifies successful redevelopment. Remediation and redevelopment centered around the mill district on the west bank of the river, one of the oldest neighborhoods in the city. A public investment of $338 million catalyzed $1.9 billion in private and nonprofit investment and resulted in the creation or preservation of 7,000 jobs, the addition of 4.5 million square feet of commercial space, and 5,300 new residential units (Calvert and Ramadhyani, 2012).

Minneapolis has not had success with waterfront brownfields redevelopment in the neighborhoods upstream of downtown. Plans for this area were disrupted by the 2008 recession and by industrial landowners who either refused to sell their properties or asked for more than the city could afford. However, conditions for redevelopment are shifting. The city recently updated its strategic plan for the area and permanently closed the St. Anthony locks, preventing maritime freight traffic from reaching riverside industries previously unwilling to relocate. In the meantime, some developers moved forward with projects on their own, complicating the planning process (Brandt, 2014).

**Key lessons:**

The story of Minneapolis’ successes and struggles provides three lessons. First, being flexible pays: having a plan is good, but it is important to recognize that plans need to evolve to reflect economic changes in the city. Second, areas in transition like the upstream sites are intimidating to potential investors and add yet another element of risk into the development equation. Third, private partners are vital to the redevelopment process; in the example of the upstream areas, strategic redevelopment was hampered by private developers pursuing their own projects for the area.

**Wisconsin Case Studies of Waterfront Brownfields Redevelopment**

Full narratives with additional figures for each city’s work are available in Appendix D.

**Appleton**

Since the mid-1990s, Appleton has successfully redeveloped a number of sites on the Fox River, including a river walk, multiple restaurants, affordable and senior housing, and numerous apartments (Rehbein, 2016). One development, River Heath, is particularly illustrative of waterfront brownfields redevelopment’s benefits: the project has generated $25 million in tax
receipts for the city and helped connect a city park with downtown (Geall, 2016). The riverfront TIF District with River Heath—along with affordable housing and senior housing developments—saw a $10.6 million increase in value between 2009 and 2014 (City of Appleton, 2015).

Appleton used $16 million in Wisconsin Housing and Economic Development Authority (WHEDA) tax credits to finance redevelopment of a 54-unit affordable housing project (City of Appleton, 2012). In this case, the WHEDA credits helped spur redevelopment, provide affordable housing, and increase the tax value of previously derelict land. Cities looking to engage in redevelopment should look across the scope of their responsibilities to identify unique funding opportunities like this.

**Key lessons:**
Appleton illustrates two key lessons for waterfront brownfields redevelopment. First, the development at River Heath was guided mostly by the developer, who had previous experience working with brownfields redevelopment. This illustrates the importance of strong committed leadership. Second, the Appleton redevelopment used a wide variety of funding sources—from local TIF districts to DNR and WHEDA support. This illustrates the importance of mixed funding and creativity in supporting redevelopment.

*Figure 1: Percent Change in the Number of Jobs within the Fox River Valley Redevelopment, Appleton WI 1997-2013*
La Crosse
Brownfields became the primary source for new development in the city of La Crosse because of a lack of greenfields for development (Gilman, 2016). The city undertook a few flagship waterfront redevelopment projects on brownfields. One area, the Riverside Redevelopment project, was particularly successful. After redevelopment, a portion of this project (CenturyTel’s offices) alone is worth $25 million and employs more than 650 people full time (DNR, 2001; Hubbuch, 2015).

*Key lessons:*
La Crosse’s waterfront brownfields redevelopment provides three lessons. First, public investment in assessment and cleanup of brownfields locations can help draw in developers by reducing economic risks. Successful projects were supported by public funds to assist in the early stages of development. Second, La Crosse shows the importance of private-sector support. CenturyTel and Riverside Center were supported by the private sector early on and throughout the process. Third, La Crosse shows the importance of timing in redevelopment. Projects have stalled later on in the process, despite cleanup costs being covered, because long timeframes without mutually agreed-upon partnerships have discouraged private developers. An agreed-upon timeframe must be set up in advance to make sure that public money is efficiently spent.

![Figure 2: Percent Change in Number of Jobs within the LaCrosse, WI Waterfront Redevelopment Project, 1997-2013](image)

Percent change is capped at 100% to better illustrate trends over time

Sheboygan
Sheboygan invested $12 million and the state invested more than $4 million to clean and develop a waterfront brownfields site (DNR, 2006). The Sheboygan Harbor Center is now considered the
signature project for the city and has proven to be successful both economically and environmentally (Pelishek, 2016). The Blue Harbor Resort alone created 350 full-time jobs and brought consumers, tourists, and new residents to the area (DNR, 2006). In 2006, the data shows an 854% increase in the number of jobs from 22 to 210. We believe this indicates the success of the first establishments of the project in drawing consumers to the area, thus increasing the opportunity for additional establishments to open and create new jobs.

Key lessons:
Sheboygan’s waterfront brownfields redevelopment teaches us a lesson similar to those of our other case studies. Public funding of assessment and cleanup promotes developer interest by reducing the risks associated with uncertainty of contaminants and costs. This can be seen in the South Pier project because of the substantial developer interest in the property once the effort was put in to clean the sites, but not before these cleanup efforts were made.

Figure 3: Percent Change in Number of Jobs within the Sheboygan Waterfront Redevelopment District, 1997-2013
Percent change is capped at 100% to better illustrate trends over time

Racine
Racine has limited availability to develop beyond city limits and must look to its urban core of waterfront brownfields properties for growth (Sadowski, 2016). The RootWorks project is the current effort to redevelop 325 acres of centrally located waterfront brownfields (Vandewalle & Associates, 2013). Nearly $900,000 in funding has come from diverse sources, including the EPA, DNR, WEDC, TIFs, and private investors (Sadowski, 2016). Technical support from the DNR and
other agencies has been helpful in advancing the project and has enabled creative solutions for many problems faced by the city (Sadowski, 2016).

**Key lessons:**

Three lessons can be learned from the Racine case. First, partnerships are a useful and often integral tool for waterfront brownfields development. While RootWorks is not technically a public-private partnership, the site brought in developers early to partner on the plan and vision for the future and ensure buy-in. Second, the case illustrates the importance of early planning. The site has been in planning since 2011, and construction is just beginning; this has allowed the district-wide (as opposed to singular site) redevelopment to take hold. Third, the case illustrates the importance of using an array of funding sources. Planning and cleanup are costly early stages of a redevelopment project. Racine’s use of TIFs and grants from DNR, EPA, and WEDC have helped successfully court private investment.

**Milwaukee**

In the late 1990s, the city of Milwaukee began an ambitious project to redevelop the Menomonee River Valley. The city of Milwaukee along with private partners formed the Menomonee Valley Partnership (MVP), a public-private partnership made up of a 20-person board of directors from across the public and private sectors (DeSousa, 2011). The city assisted the redevelopment by using a number of financing mechanisms to lower the economic risk for developing the site in 2004. Using eminent domain, Milwaukee acquired 140 acres of former industrial land for $3.5 million, established a $1 million TIF district, and raised $24 million in grants and donations (DeSousa, 2011).
By 2009, 300 acres of contaminated land had been redeveloped, bringing in 20 new companies and prompting the expansion of seven others. This business growth created 4,200 new jobs (MVP, 2009). The MVP found that every $1 of public investment yielded $3.60 in private investment, with property values more than doubling between 2002 and 2009 (MVP, 2009). As of 2016, over 39 firms located to the area—with many of these moving in amidst the economic recession of 2009—and over 5,200 jobs have been (DeSousa, 2011; MVP, 2016). The site has also incorporated 45 acres of inner-city green space (MVP, 2016). By 2012, over 1,100 additional jobs had been created (DeSousa, 2011) and as of 2014, because of local growth, the private funds leveraged per $1 of public investment had risen to $4.20 (Public Policy Forum, 2014).

**Key lessons:**

There are six lessons from the Menomonee Valley. First, redevelopment projects must be accompanied by a robust set of planning and design activities that establish a common vision and detailed roadmap. The more than five-year planning process was one of the most important factors in building support and groundwork for the Menomonee Valley Project. Second, intergovernmental cooperation and public-private partnerships facilitate success. Along with establishing support for a common vision amongst stakeholders, these governance structures allow for a coordinated structure to leverage public and private funds. Third, funding sources must be aggressively pursued and creatively assembled. In the Menomonee Valley case, funding came from a variety of public and private sources and from a variety of levels of government; this

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4 Although as DeSousa observes (2011: 11), most of these firms have relocated from other areas of Milwaukee or Wisconsin, so net job growth depends on the scale of analysis.
allowed the project to raise enough money to be successful. Fourth, the local government must assume considerable economic risk to get projects to the stage of being ready for development. In the case of Milwaukee, this involved buying and cleaning up land on the front end of development. Fifth, the Public Policy Forum recommends that aggressive marketing of redevelopment opportunities is key (Peterangelo and Henken, 2014). Sixth, local leadership is important in successful waterfront redevelopment projects. Stakeholder coalitions and local leaders helped steer the project through the planning phases and pursue funding options for revitalizing the Valley. These six takeaways—planning, partnerships, creative funding, publicly assumed risk, marketing, and strong leadership—directly inform our recommendations for waterfront brownfields redevelopment across the state.

VI. Results:

This report investigated the challenges to and benefits of waterfront brownfields remediation and redevelopment in Wisconsin. We asked three guiding questions: (1) What are the benefits or potential value of waterfront redevelopment, (2) what are obstacles to waterfront redevelopment, and (3) what actions may be taken to remove the identified obstacles? The following section provides our findings for each of those questions.

Economic Potential of Waterfront Brownfields Redevelopment

As the charts in the case studies illustrate, the number of businesses and jobs within the waterfront redevelopment districts demonstrated much faster growth than the city in several places. While this finding alone does not infer that all waterfront redevelopment will yield such results, it does show that investments have the potential to create much greater economic opportunities. The sites where redevelopments occur are usually economically depressed, with few resources to generate new jobs and few amenities to draw businesses to the area. Thus, waterfront redevelopment offers an opportunity to reinvest in blighted communities that would otherwise likely not be able to bring in investments.

Based on the results of the economic analysis, published reports on the redevelopment projects, and interviews with members of the community, it is clear that waterfront redevelopment can create new economic opportunities. In the case studies we examined, the use of public funding as seed money to catalyze redevelopment and leverage public funds can yield as much as $4 in private investment for every $1 of public investment. Even greater benefits accrue from the project, including increases in property values, job creation and wages, and tax revenue to name a few. This indicates that the state and communities investing in waterfront redevelopment have the potential to leverage a great deal of private investment and yield a substantial return on public investment.
Identified Obstacles for Waterfront Brownfields Remediation and Redevelopment

Waterfront brownfields redevelopment yields public and private benefit but is a costly and uncertain process. We separated this risk into five policy challenges at this report’s outset. Here we synthesize these challenges into two fundamental obstacles to waterfront brownfields redevelopment. Two unique economic qualities of brownfields drive this: (1) previously contaminated land requires remediation and developers are legally liable for doing so; and (2) fully coordinating, assessing, and implementing remediation needs across multiple brownfields sites is a lengthy process involving substantial stakeholder input. The uncertainty and variability of the required investment for site cleanup and the return on this investment means that waterfront redevelopment that involves brownfields can be economically risky. The real or perceived risk of redevelopment acts as a disincentive for developers.

Cost and Liability

Brownfields redevelopment represents a balancing act between community health and community development: Cleanup regulations that are too stringent put economic risk on the developer; regulations that are too lenient put health risk on the public (Wernstedt and Hersh, 2003; Kashian and Paull, 2015). Wisconsin’s existing policy approach to striking this balance is joint, strict, and several liability. This effectively makes new landowners liable for any existing contamination of the site. Site cleanup is the major expense in redeveloping brownfields, and it varies on a per-site basis (Wernstedt and Hersh, 2003).

Although this liability approach may appear harsh to some, it helps the state of Wisconsin and taxpayers avoid the burden of subsidizing the majority of remediation work – the cost of contamination or remediation is reflected in the sale price of the land. In other states where liability is more lenient, a substantial public fund is needed to ensure that remediation occurs; if public funding is not available, the sites may end up being abandoned rather than cleaned up. Wisconsin’s liability program strikes a compromise that does not allow for contamination to continue and ensures that there is a responsible party so that the responsibility does not fall on the state.

However, placing liability on the landowner means they take on added economic risk, because extent and severity of contamination—and thus required remediation—is not known until the site is examined (a potentially costly process in itself). The risk of the initial site cleanup investment has historically deterred developers, particularly developers inexperienced in brownfields.

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5 We find these five challenges—economic risk, limited funding, balancing health and development, waterfront scale, and institutional coordination—useful to consider in crafting problem solutions. However, here we want to diagnose the roots of these challenges, which, from our review of literature and case studies we see as coming from two fundamental obstacles.

6 These problems are exacerbated by the neighborhood effects of surrounding property values, which we discuss in detail in Appendix C.

7 Although former owners are still liable if they can be found or have the ability to pay, Wisconsin’s current policy means that, in the case these prior owners cannot be found, the present owner is liable.
redevelopment, from investing in these types of projects (Keyes, 2016). This risk is compounded along waterfronts because redevelopment often includes multiple sites, many of which are subject to additional discharge and filling regulations (Hersh, 2012).

While liability and unknown costs may seem to be insurmountable barriers to new developers, there are ways to offset this risk and ensure that developers are interested in making the investment. Offering public funding for the initial assessment can ensure that municipalities and developers are able to explore the full potential of the site without as much risk, and grants that at least partially fund the cost of the cleanup for contaminated sites will reduce this risk even further. When this public funding is made available, developers are far more willing to take on the project.

**Institutional Coordination across Varying Spatial and Temporal Scales**

Coordination is critical to ensuring the success of a waterfront redevelopment project. Unlike single-site brownfields redevelopment projects, waterfront redevelopment projects incorporate multiple sites, often owned by several different landowners. Arranging the purchase of all parcels can take time and money, particularly if the owners are reluctant to sell key parcels. The redevelopment of such a large area will also require the support of the municipality and the members of the community, so ensuring early stakeholder involvement and opportunity for public participation is particularly important to ensure that no unnecessary delays occur.

Waterfront-specific projects are under the jurisdiction of multiple government agencies with varying priorities. The variety of government stakeholders makes the redevelopment process longer, and potentially riskier, as the entire permitting process could be delayed or require more cleanup efforts than originally anticipated. At this time, the permitting process has not been made clear to interested developers and no agency has streamlined the process or vetted the permits for ease of access and transparency of information. Brownfields programming has been customized to prioritize customer service and make the process clear and as fast as possible. Streamlining the permitting process for waterfront redevelopment will be more difficult and require greater coordination, since permits are required by numerous agencies, but would remove much of the uncertainty and improve the timeline. Interdepartmental coordination is a persistent administrative challenge, but especially within Wisconsin’s current regulatory context. Act 21 was passed by the Wisconsin legislature in 2011 and limited the way administrators in public agencies can regulate and interpret laws (State Bar of Wisconsin 2011).

Together, the identified obstacles and the risk they create mean that without incentives and policy innovation, brownfields redevelopment is frequently not as competitive as greenfield development. We elaborate on the economic rationality of each issue in Appendix C. However, developers with prior brownfields experience have success in navigating the redevelopment process, showing that under current conditions redevelopment is possible, and under improved conditions, waterfront brownfields can become more competitive with greenfield sites for development.
Identified Best Practices in Waterfront Brownfields Remediation and Redevelopment

In this section, we seek to identify the policy conditions that enable successful waterfront brownfields redevelopment. Based on our case study analysis, we find three key lessons for success: (1) state support; (2) public-private partnerships; and (3) strong local leadership. While each element on its own will not necessarily produce a thriving redeveloped waterfront, the combination of these three ingredients is present in most successful redevelopment projects. We elaborate on each factor below.

State Support Matters

The process of redeveloping brownfields along waterfronts can be economically risky because of cost uncertainties, and coordinating project scopes and timeframes. However, public support at the most volatile, early, stages of these projects can yield dividends. The most critical funding needed is securing pre-development funds which are used for site assessment and often initial stages of cleanup to ensure that developers can break ground sooner and incur less risk. This seed money is often the single greatest catalyst for the entire redevelopment project (Keyes, 2016). State support, especially early on, matters.

New York, Ohio, and Pittsburgh are key examples. New York has a three-part program that covers the majority of remediation costs along with assisting municipalities with planning and implementation. New York also has two different waterfront funds that have provided about $360 million since 1982. Meanwhile, Ohio had the flagship Clean Ohio Fund, which has put $400 million of public funding into brownfields remediation and redevelopment between 2002 and 2013. This funding yielded $4 billion of redevelopment. Pittsburgh’s Three Rivers waterfront redevelopment demonstrates state support on the city-level: over its 15 year process of planning and redevelopment, the $128 million of public investment paid off by catalyzing $2.6 billion in waterfront redevelopment. This is a ratio of 20:1 for private funds leveraged by public funds.

Wisconsin is also a leader in brownfields remediation and redevelopment support. The DNR’s brownfields remediation and redevelopment program was involved in each of the cases we mention above, at the very least in a granting capacity. Without the DNR support, we speculate many of the smaller projects would not have gotten off the ground. The DNR support from the beginning demonstrably helped the flagship Menomonee River Valley project achieve its successes. However, in an era of declining public funds for brownfields redevelopment from state and federal sources simultaneous with the emergence of new, ambitious, waterfront plans, the DNR support has been spread thin. This amplifies the need for efficient and effective public funding to leverage private investment in waterfront redevelopment support from the state level.

Partnerships Matter

One of the best ways to leverage private investment is to get communities and the private sector on board. An effective way to do this is through public-private partnerships (P3s). P3s, or board-
advised organizations of public and private stakeholders, were key to the success of most of the projects studied. Pittsburgh, Milwaukee, and La Crosse, used P3s to facilitate the redevelopment of their waterfront brownfields. Minneapolis’ difficulties redeveloping in line with a strategic plan illustrates the complications that may arise when cities fail to engage with private developers in a formalized partnership.

P3s are especially valuable for waterfront brownfields redevelopment because they reduce the amount of risk developers face. Well-managed P3s reduce uncertainty: early government engagement with developers can help define regulatory requirements and identify process uncertainties (Bartsch, 2006). Combined with the longer-term planning process of waterfront redevelopment, this can be a recipe for success as in the case of Milwaukee.

Three factors affect the nature of a P3: the size of the municipality, the size of the redevelopment program, and the local leadership commitment. Large municipalities like Milwaukee have a wide variety of options to cover programmatic and site-specific issues, while medium-sized cities like Appleton will likely benefit from standing committees or project-specific groups. Smaller municipalities would benefit most from a small core working group for a specific project (Bartsch, 2006). One of the largest elements in the success of P3s is early engagement. Initiating a P3 as early as possible will minimize risk for the developer while ensuring that the government’s expectations for remediation and redevelopment are met as well (Bartsch, 2006). While state support and P3s are important for success, these programs require strong leaders to enact them.

**Strong, Committed Leadership Matters**

A common ingredient for success in our case studies and literature review was the need for strong, committed leaders, or “champions” to advocate for and guide the waterfront brownfields redevelopment process. This is a commonly noted factor in the literature on brownfields redevelopment, with the leaders often called “brownfields entrepreneurs” (Pepper, 1997). A striking and successful example is the Menomonee River Valley project, which was decades in the making and was successful because of leadership and volunteered time by a key group of individuals across the public and private sectors (DeSousa, 2011).

Committed leadership’s primary benefit is that it further reduces uncertainty. An experienced third-party planner noted that, from his experience, of the cities that had plans prepared, the key factor in whether the waterfront plan was implemented or became an archive piece was whether the city had a champion to drive the work forward. If a municipality is committed to the redevelopment process and partnership, the developer sees less risk in getting involved. However, if there is no advocate, risk increases because there’s less assistance in guiding the project through the approval process and building external support for it, and there is a greater chance that something will go awry in the process.
The degree of commitment required varies based on the size of the municipality. Bartsch (2006) recommends that large cities will require high-level leadership from the mayor or senior city officials to ensure “consistency in outreach, full participation in decision-making, and accountability.” Medium- to smaller-size cities may need only a “suitably empowered” brownfields administrator—a task that falls to economic development staff in many Wisconsin municipalities.

Each of these factors—state support, partnerships, and local leadership—is important to realizing the potential benefits of waterfront brownfields redevelopment. Leaders’ success comes from their ability to solve the economic and governance risks inherent to redeveloping brownfields on the waterfront. How, then, might Wisconsin capitalize upon and encourage these best practices?

### VII. Policy Recommendations

Above, we demonstrate that current policy is enabling waterfront brownfields redevelopment. Yet, there is additional existing growth potential that can be easily tapped. Demand also exists for waterfront brownfields redevelopment. Over 60 communities have begun waterfront plans that are in various stages of implementation. The vast majority of these have yet to break ground. There is no state database of waterfront redevelopment plans, this number comes from unrelated research on commercial ports, and by no means constitutes a comprehensive list. In addition to this demonstrated interest, some businesses seek communities with waterfront amenities, both as a metric to determine location and a way to draw high-talent workers (Winters, 2016). To respond to this customer demand and systematically increase support for waterfront redevelopment across Wisconsin, we recommend the creation of a DNR waterfront-specific assistance program along with four suggested tasks for this program.

**Encourage the State Legislature to Pass Legislation Enabling the DNR to Create a Waterfront-specific Brownfields Program**

If realizing the benefits of waterfront redevelopment in Wisconsin is a priority for the DNR, we recommend that the agency create a waterfront-specific program within the Remediation and Redevelopment Program. Our analysis demonstrates that state support is one of the most important practices for encouraging brownfields and waterfront development. Waterfront redevelopment faces unique challenges of risk and coordination, but it presents unique growth potential for Wisconsin. This suggests that targeted support would be most helpful in overcoming waterfront redevelopment barriers. Such a program would build off the nationally-recognized successes of Wisconsin’s brownfields program to address the specific policy challenges of waterfront redevelopment.

Because of Act 21 in Wisconsin, a waterfront-specific program within the DNR would need to be explicitly written into state statute in order to be implemented. Act 21 was intended to encourage
growth in the state by lifting regulatory burden; however, currently it’s inhibiting growth by restricting the DNR from establishing a program to support waterfront redevelopment. The demand clearly exists for waterfront redevelopment; over 60 communities have developed a plan, and approximately a dozen communities even received grants for the planning stages. However, only a handful of projects have been successfully completed. Timeline delays and a lack of funds for cleanup have been cited as the primary reasons in our case studies; yet, many more communities seem to have never done anything with their plans. Rather, these archived documents have failed to catalyze into a real effort to revitalize the community. It seems likely, given the status of the majority of these projects, that one of the challenges previously listed has prevented these plans from being implemented. This indicates a need for either information or funding, a need that cannot be met by any one agency as the regulations stand now. A dedicated waterfront redevelopment program could begin to address these needs and prevent waterfront redevelopment plans from becoming good ideas that never made it past a concept. Further, despite our previously detailed limitations, our analysis has found real and substantial benefits from waterfront redevelopment projects that have come to fruition. While a few unique projects have occurred in absence of a DNR waterfront-specific program, the majority have not, and the successful projects show that there is great potential for economic development, which could become a missed opportunity if greater attention is not given to waterfront redevelopment efforts.

To help realize the growth potential of waterfront brownfields redevelopment, we recommend the state legislature amend statutes put forth in Act 453 (“the Land Recycling Law”) to enable the DNR to create a waterfront-specific program within its Remediation and Redevelopment Program. This waterfront-specific program will help facilitate public and private sector collaboration in waterfront redevelopment. We recommend that the program membership include DNR staff along with members of WHEDA and WEDC. Even if members of these latter agencies are ex-officio, they have the necessary expertise to thoroughly balance the goals of waterfront redevelopment. We recommend an inter-agency composition because collaboration between state agencies is a key challenge for waterfront redevelopment. We recommend initially redirecting existing DNR staff resources for this program and scaling up as the budget allows. If such a program is created, we recommend including a line item in the DNR’s Fiscal Year 2017-2018 budget. This program would help guide developers and municipalities through the regulatory process, attempting to reduce the economic risks of redevelopment. Below we recommend four initial tasks identified from best practices that would facilitate this process.

**Recommended Tasks for a Waterfront-specific Brownfields Remediation and Redevelopment Program**

(1) **Create a Municipal and Developer Toolkit to Guide Redevelopment**

The process of redeveloping waterfront brownfields is complicated and fraught with uncertainty. It also involves multiple government-permitting bodies and long time-scales. All of these factors create perceived risk for newer developers, which makes them less likely to engage in
redevelopment. Creating a redevelopment toolkit for developers and municipalities could reduce this risk, because it would provide them with a roadmap to navigate the remediation process, as well as permitting processes associated with waterfront development. This would increase at least one element of certainty in the process by providing an agreed-upon outline of the process for all parties involved.

The toolkit would be a short document of best practices in waterfront brownfields redevelopment that municipalities could use to coordinate their redevelopment process. For example, it could provide a list of the possible approvals required for waterfront brownfields redevelopment, as well as contact information for the various DNR staff associated with redevelopment and waterfront policy. Such a toolkit would also provide information on the best ways to create public-private partnerships to empower local redevelopment leadership. By providing a clear path forward for remediation and redevelopment, the toolkit will lower uncertainty and risk, and it will encourage more cities and developers to engage in waterfront brownfields redevelopment.

This task is relatively small in cost: it requires one or two experienced staff in the DNR to create and distribute a document to municipalities and developers interested in waterfront brownfields redevelopment. However, this task produces an unpredictable amount of benefits: it’s difficult to trace the exact impact of information-sharing or to know if the guide would be used.

(2) Research and Implement Creative Funding Solutions

Funding is frequently listed as the largest barrier to waterfront brownfields redevelopment. From Ohio and New York, we can see that robust public funds are a key driver of brownfields success. However, within the context of tight public budget constraints, more creative funding options can be pursued. From the local Wisconsin cases we reviewed we saw a mixture of TIF funding, public-private partnerships, and a constellation of grants from state and federal sources pursued on the local level. One option for the waterfront-specific program could be an investigation of new and innovative funding sources to support local waterfront brownfields redevelopment efforts in more depth. Such funding sources could also be creatively maximized through collaborations that synergize goals of WEDC and DNR.

This task would have a low to moderate economic cost, depending on how many experts were employed to conduct it. The benefits could be potentially large, if the funding solutions were pursued. However, the feasibility of funding solutions would vary depending on the political climate of the state and the availability of public funds. Our examination shows that brownfields—on or off the waterfront—are a wise use of public funds, and one that in the state of Wisconsin has historically leveraged large amounts of private funding. We recommend the waterfront-specific remediation and redevelopment program examine the most cost effective ways to leverage private investment with public funds.
(3) Generate a “Shovel-ready Projects” Database

An online database, or showcase listing, of remediated and closed waterfront brownfields sites could draw developers and employers to the state. Waterfront brownfields remediation is often driven by municipalities, which acquire sites, remediate them, and then issue requests for development proposals. Because the waterfront brownfields remediation process is time-intensive, it creates an issue between the timing of remediation and development readiness of the site. Often, developers are included later in the process and have made earlier investments in other sites. One way to remedy this is to share information about when sites are ready for development and which municipalities are early in their planning process and seeking partners. A potential model for this system is WEDC’s “Certified in Wisconsin” project database, which displays development-ready sites with lower-risk, expedited approval processes.

The administrative burdens of this task could be moderate to significant, depending on the resources devoted to creating a user-friendly interface. Furthermore, DNR program administrators would face burdens in coordinating with municipalities to collect and make available up-to-date information on waterfront brownfields. The economic costs of such a task would be moderate. Collecting and publishing new information will require initial and ongoing investment in staff resources at the state level. The economic benefits would be speculative; it is hard to predict the exact impact of creating such a database, although academic literature recommends it as a potentially impactful policy solution (c.f. Hayek et al, 2010). Though such an improvement in transparency and accessibility of information may serve to catalyze additional redevelopment, most of the “low-hanging fruit” projects have already begun, making it questionable whether it would encourage new projects or plans.

(4) Collect Key Metrics for Future Analysis

In order to conduct a precise analysis of costs, benefits, and returns on investment from waterfront brownfields redevelopment, more specific data sets are needed. Because of this, our fourth recommendation for the waterfront-specific program is to focus on systematically collecting econometrics on brownfields redevelopment, such as the data recommended in the Future Research section incorporated into Limitations.

This task is probably the most staff-intensive because it requires mining data, coordinating among highly decentralized tax assessors, and creating a database. Although up-front resource demands for this task would be high, the payoff would be large as it could allow a more direct targeting of support for waterfront redevelopments. Specific econometrics will also allow the DNR to see the most cost-effective methods for stimulating private investment in redevelopment. They will also allow the DNR to more specifically make the business case for waterfront redevelopment, which our preliminary analysis suggests exists and future analysis could more precisely demonstrate.
VIII. Conclusion

Our analysis was driven by three questions that sought to answer a larger question: what are the potentials and limits to waterfront brownfields redevelopment in Wisconsin? From our research, we conclude that waterfront brownfields redevelopment has a large potential in Wisconsin. It is already a reality in many areas of the state: from the Menomonee Valley of Milwaukee to the riverside of La Crosse, these successful developments provide models for future accomplishments.

However, waterfront brownfields redevelopment still faces challenges that are similar to, and greater than, the challenges faced by landlocked brownfields redevelopment. Upfront financing of site cleanup is a large barrier to the competitiveness of waterfront brownfields sites. The uncertainty surrounding contamination amounts combined with the risks of potentially expensive remediation that may take years to recoup make the sites economically uncompetitive without public support. On top of this, we found that waterfront redevelopments, because of their frequently large scale, require lengthy planning processes and coordination between differing levels and agencies of the public and private sector. This can create long wait times and exacerbate uncertainties for developers who might want faster returns on investment. Based on analysis of four other states’ programs and five waterfront redevelopments within Wisconsin, we demonstrate three best practices in addressing these persistent challenges: (1) comprehensive and clear state support matters; (2) public-private partnership organizations enable community buy-in; and (3) local leadership is vital to success.

To encourage and support the implementation of these best practices in Wisconsin, we make a twofold policy recommendation. First, we recommend that the state legislature amend statutes put forth in Act 453 (“the Land Recycling Law”) to enable the DNR to create a waterfront-specific program within its Remediation and Redevelopment Program. This program would be cross-cutting and built around interagency collaboration to address challenges unique to the waterfronts that saturate Wisconsin. Second, we recommend four initial tasks for the waterfront-specific remediation program to begin working on: (1) create a toolkit of best practices for communities and developers interested in redeveloping their waterfronts; (2) research and implement creative funding solutions to provide “seed” money for waterfront projects; (3) generate a database of Wisconsin waterfront redevelopment “shovel-ready” projects; and (4) begin collecting key metrics to perform a more precise cost-benefit and impact analysis of waterfront redevelopment.

Appendices

Appendix A: History of Brownfields Laws and Regulations

Federal law describes a brownfields as “a property, the expansion, redevelopment, or reuse of which may be complicated by the presence or potential presence of a hazardous substance, pollutant, or contaminant” (42 USC 9601). Federal support for brownfields remediation began in
1993 with the EPA’s Brownfields Redevelopment Initiative. By 2002, the national Brownfields Program had distributed grants of about $200,000 each to 436 local governments (EPA, 2006). The program is largely regarded as a success and retains bipartisan support, with brownfields policy innovation being driven by Republican and Democratic administrations (Pepper, 1997; Greenberg and Issa, 2005).

Local successes enabled the federal program to expand in 2002 with the passage of the Small Business Liability Relief and Brownfields Revitalization Act. This law authorized up to $250 million in federal funds to be used for brownfields redevelopment, including $50 million for assessment and cleanup (NACo, 2008). The law also reformed federal liability requirements under the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA), which affected Wisconsin State Statute 292. Under CERCLA, any “potentially responsible” party can be held responsible for cleaning up a contaminated site, including new owners who may not have polluted the site but recently acquired it for redevelopment. The Brownfields Law amended CERCLA to exclude smaller entities and amounts of contamination from the law in order to incentivize brownfields remediation and redevelopment (NACo, 2008). In Wisconsin, this allowed statute 292.15(2) to exclude voluntary contaminant cleanups from liability requirements.

Immediately following the EPA’s pilot program, Wisconsin was one of the first states to pass brownfields legislation, the “Land Recycling Law” in 1994.\(^8\) The Land Recycling Law also changed the liability context for brownfields in the state. Prior to the law, the liability for brownfields contamination was on the owner under federal law.\(^9\) The Land Recycling Law increased flexibility in liability regulations for brownfields developers. However, strict cleanup requirements, lengthy cleanup certification times, and high remediation costs for liable parties still acted as a barrier (Wernstedt and Hersh, 2003: 14). Seeing this problem, DNR enacted further changes through the voluntary cleanup liability party exemption (VPLE) in the Spill Law. VPLE mandated that parties developing brownfields sites buy insurance to cover costs. This enabled these parties to cover the risk of encountering larger amounts of contamination than anticipated, maintaining health protections while also incentivizing redevelopment (Wernstedt and Hersh, 2003: 19).

Despite VPLE’s innovative solution to high cleanup costs and risk, certification times could still be made more efficient. As Wernstedt and Hersh observe (2003: 20): “… of the 22 sites that had applied for VPLE status and remained in the program in 1998 […] five sites […] have received a COC [Certificate of Completion]. The five sites with a COC received it in 1998 or later years and, on average, it took nearly 800 days between application and receipt of the COC.” [emphasis

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8 Wisconsin’s legal definition of brownfields (S 560.13) differs slightly from the federal definition. It includes “abandoned, idle or underused industrial or commercial facilities or sites, the expansion or redevelopment of which is adversely affected by actual or perceived environmental contamination.”

9 CERCLA still creates strong liability constraints against owners by making a single owner liable for a contaminated property, and this owner need not be the polluter if the polluter is unable to pay (Hersh and Wernstedt, 2003).
added]. They suggest that this emerges from the fact that the DNR must coordinate with the Wisconsin Economic Development Corporation (WEDC) to balance different objectives of environmental health and economic growth. The resulting outcome is an occasionally lengthy process of coordination in an attempt to align incentives among diverse stakeholder groups: lenders, municipalities, purchasers, and voluntary parties (Wernstedt and Hersh, 2003: 21).

In 1998, Gov. Tommy Thompson convened the Brownfields Study Group (BSG), a consortium of experts, practitioners, and stakeholders, to try and address some of these challenges to implementing brownfields redevelopment. The initial gatherings of the BSG culminated in a committee report with strong recommendations to increase investments for redevelopment. The first of their recommendations was to provide additional TIF opportunities through Environmental Remediation (ER) TIFs. This option would open up additional financing options for communities that had already reached their quota on TIF funding, and expanded TIF options to counties and towns. While the BSG believed that this new funding tool would be well-received, it has been underutilized. Nancy Frank, a key BSG member, hypothesized the lack of implementation may result from confusion over differences between TIF and ER TIF policies, such as differing time schedules.

Appendix B: Interview Questionnaire

I. Everyone: Broad questions

1. Who are you and what is your role in brownfields waterfront redevelopment (BWR)? How did you become involved?
2. What do you see as the biggest benefits to BWR?
3. What do you see as the biggest limitations to BWR?
4. What do you hope to see the state do with regard to BWR policy in the coming years? (if anything)

II. For local public-sector employees and developers

About Waterfront Brownfields generally

1. How many brownfields lie within the area you intend to redevelop? What was the former use for these sites, and what kind of contamination exists/do you anticipate at these locations?
   a. If you don’t know for certain, on what are you basing your decision?
2. How much will it cost to clean up these sites? How do you intend to fund this cleanup? What state/federal funding or other resources are you using or do you intend to apply for?
3. How important are the brownfields sites to your redevelopment plan? Are they the basis, or are they peripheral to the rest of the plan?
4. Are the brownfields sites currently tax-delinquent and/or abandoned?
5. How will the economic benefits and return on investment for these sites differ from the rest of the waterfront redevelopment project?

About implementation and other challenges
1. How far into the planning and implementation of the redevelopment project are you currently? Is this on track with your timeline? If not, what has contributed to changes in the timeline?

2. How have state, federal, and local government agencies aided you in this project?

3. What challenges do you foresee in this redevelopment project? How could they be resolved?

4. Do you have any recommendations about how the DNR, local units of government, or other partners can work more closely to assist in the development of waterfront properties that have contamination concerns?

**For specific Waterfront Redevelopment Plans**

1. What is the primary use you intend for this redevelopment project? Why did you choose this use for this land (i.e. zoning, surrounding neighborhoods, values, etc.)?

2. How much will it cost to fully implement this plan?
   a. Who will bear these costs?

3. What economic benefits do you estimate from this plan? In particular, what job creation/wage increases, tax revenue, and property-value increases, etc.?

4. What return on investment do you anticipate? How did you arrive at this estimate?

**Related to DNR processes**

1. Has a DNR process (regulatory, permitting, grant, administrative) resulted in “success” or “excellent customer service” at one or more of your projects? If so, what were the circumstances, programs, and/or incentives used?

2. Has a DNR process (regulatory, permitting, grant, administrative) limited your success at one or more of your projects? If so, what were the circumstances?

3. [for developers only] Is it clear to developers of waterfront projects what type of approvals are needed? Where the staff resources can be found? How the financial resources can be accessed?

4. [for developers only] What could the DNR offer that would provide the greatest benefit – regulatory, organizationally, financially, liability – to waterfront developers? What could we change to make this process run more smoothly and be more transparent to help your projects be completed successfully?

5. Have state laws hindered or helped your success? Which ones? What modifications do you suggest?

6. Has involvement by a state or federal agency other than the DNR helped or limited your success at one or more of your projects? If so, what were the circumstances?

**III. For researchers involved in writing brownfields reports**

1. What economic costs, benefits, and return on investment did you predict for Wisconsin’s waterfront and/or brownfields redevelopment potential? How did you arrive at this estimation?

2. Did your findings differ from other economic analyses of waterfront and/or brownfields redevelopment potential? Why or why not?
3. Were any of your findings surprising, or even counterintuitive? Why do you think the findings differed from your original assumptions?
4. What factors were taken into account in your analysis? Were there any factors that you were not able to include? Why?
5. As we move forward, are there any other resources you would recommend we investigate for this analysis?

IV. For nongovernment organizations (NGOs) and advocacy groups:
   1. What is your group’s position on brownfields? Why?
   2. What has your involvement in state and local waterfront brownfields policy been?
   3. What do you see as the biggest opportunities for waterfront brownfields development?
   4. What do you see as the biggest challenges for waterfront brownfields development?
   5. What do you hope to see the state do with regard to waterfront brownfields policy?
Appendix C: Detailed Discussion of Economic Challenges to Waterfront Brownfields Redevelopment

Brownfields can be understood as a negative externality of the development process. They are environmentally contaminated sites whose social impacts (contamination, urban blight, and opportunity costs of not redeveloping) are not fully valued by the market. These negative externalities arise from two places: pollution and the surrounding neighborhood. We examine each in turn.

Pollution Externalities
Heightened development costs stem from the fact that brownfields occur on real or perceived contaminated land. As former industrial land, brownfields are most often contaminated with either heavy metals or chemicals from the manufacturing process (US Conference of Mayors, 2006; Hayek et al, 2010). In rural areas, contamination often comes from underground storage tanks for gasoline (Hersh and Wernstedt, 2003). These characteristics mean that brownfields must be remediated in order to be developed. Remediation may be expensive and is highly regulated under federal and state laws as well as local zoning codes (Hersh and Wernstedt, 2003). Moreover, the degree of required remediation varies based on the intended use. Residential developments, the most profitable for developers, also require the most thorough cleanup (McCarthy, 2002; Hersh and Wernstedt, 2003). These contaminants can go unnoticed; and therefore, are unvalued by the market until someone actually does an assessment or attempts to redevelop. This requires the owner of the land to then bear the costs of cleanup.

Neighborhood Effects
The properties surrounding brownfields affect and are affected by the contamination and dereliction of the site. Typically, brownfields sites are located in spatially concentrated areas and the surrounding properties are also contaminated, have depreciating assets, or have low property values. This is a basic outcome of the history and zoning of industrial development and clustering of manufacturing in the United States and Wisconsin (Lange, 2004; BenDor et al, 2009).

The spatial surroundings of brownfields sites have two key impacts for our uses here. First, surrounding depreciated property values can limit the profitability of any one brownfields redevelopment (US Conference of Mayors, 2006). Second, certain brownfields redevelopments can raise the surrounding property values and can catalyze larger-scale neighborhood redevelopments (DeSousa et al, 2009). The neighborhood effects, in other words, can be both positive and negative. The specific neighborhood effects of any one brownfields redevelopment

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10 Although more flexibility has been provided through 2002 reforms to federal regulations and statewide regulatory loosening (Hersh and Wernstedt, 2003).
11 Often, this is where scholars and activists criticize brownfield redevelopment for facilitating gentrification (Leigh, 2000; McCarthy, 2004a, 2004b). However, we note that any type of development in these areas facilitates gentrification. Brownfield development just happens to also be using derelict land.
are challenging to predict because of the numerous contingencies they rely upon; although some have tried to model these outcomes (BenDor et al, 2009). The unpredictability of neighborhood effects leads brownfields to be a risky investment for developers, especially on top of potential pollution externalities.

**Administrative Hurdles**

Administrative hurdles describe moments when inefficiencies or unintended outcomes arise from the implementation and administration of a policy. In this sense, the government in Wisconsin has encountered such hurdles in coordinating regulations for permitting brownfields redevelopment. Because of the public health externalities that contaminated lands pose, the government has taken a fairly strict approach to liability of surrounding brownfields. Even with the loosening of liability from the 2002 Small Business Liability Relief and Brownfields Revitalization Act, a host of permitting processes from state to local levels applies to any developer applying to build on a brownfields.

Multiple government bodies are responsible for funding and regulating brownfields redevelopment. In some cases, funding comes from WEDC, in other cases from DNR, and others yet from EPA. DNR and EPA, along with the U.S. Fish and Wildlife Service (FWS), also have regulatory and permitting duties on top of this. Because of high costs and uncertainties up front for contaminated lands’ cleanup, certification can be an incredibly time-intensive process (even as some of these costs are offset by agency grants). Wernstedt and Hersh (2003: 20) discuss the long wait times (on average 610 days) for cleanup certifications and problems faced by coordinating between multiple state agencies. They observe this wait time serving as a deterrent: of the 135 sites entered into the VPLE program of brownfields cleanup between 1994 and 2003, only 35 received this certification (Wernstedt and Hersh, 2003: 21). Moreover, our interviews revealed that developers are often unfamiliar with which departments they must go to for permitting permission; or even if they are, some local planners noted that one regulatory arm of the DNR or FWS can come in later in the permitting process and require scrutiny.

This process becomes further complicated with the larger scale of waterfront redevelopment. More planning is required, bringing in more stakeholders and more local governmental departments. Furthermore, by virtue of being on the water, these redevelopment sites are subject to different sets of regulations (and ambiguities, for example that around “soil” vs. “sediment”). Most of this amounts to longer wait times for developers, who are less likely to want to partake in waterfront redevelopment.
Appendix D: Wisconsin Case Studies of Waterfront Brownfields Redevelopment

Appleton

The Fox River is Appleton’s defining geographic feature. It formerly served as the city’s industrial core: the river banks immediately south of downtown were home to paper mills and hydroelectric plants. This resulted in contamination of the soil and river sediment. Since the mid-1990s, Appleton has successfully remediated and redeveloped six major sites along its riverfront. The properties redeveloped include a river walk, multiple restaurants, affordable and senior housing, and numerous apartments (Rehbein, 2016). Remediation and redevelopment of Appleton’s waterfront has been guided by the city’s 2009 Fox River Corridor Plan. However, remediation and redevelopment of individual sites have been carried out by a mix of private developers with some city assistance. Here, we focus on one new redevelopment in particular.

The latest redevelopment on the waterfront, RiverHeath, is particularly illustrative of waterfront brownfields redevelopment’s benefits. River Heath is a mixed-use development on the site of a former paper mill. The redevelopment includes 40 apartments, offices, and restaurants, and is expanding to include a 95-bed hotel, due to open in spring 2017 (Wallenfang, 2016). The project received assistance from the city’s tax increment financing (TIF) program along with $30 million of private investment. The hotel addition is expected to contribute another $12 million in private investment. Located on a formerly tax-delinquent site, River Heath has generated $25 million in tax receipts for the city; it’s also helping connect a city park with downtown (Geall, 2016).

Development of River Heath was guided mostly by the developer, who had previous experience working with brownfields redevelopment. The developer noted that the DNR’s Remediation and Restoration program was efficient and helpful in facilitating development; however, slow action by the DNR’s wildlife divisions stalled the approval process. In fact, the development required assistance from the Governor’s office to secure necessary redevelopment approvals (Geall, 2016).

The riverfront TIF District with River Heath—along with affordable housing and senior housing developments—saw a $10.6 million increase in value between 2009 and 2014. That value will continue to grow as River Heath expands and the Foremost Dairies site across the river is redeveloped (City of Appleton, 2015). This TIF district includes only a portion of Appleton’s redeveloped waterfront brownfields sites, so the true benefit to the city has been higher.
Figure 5: Percent Change in the Number of Businesses on the Fox River, Appleton 1997-2013

Figure 6: Number of Jobs in the Top Four Industries on the Fox River, Appleton 1997-2015
La Crosse
La Crosse has a long history of industrial land use, beginning in the 1800s with the logging industry (Gilman, 2016). Since the early years of logging, La Crosse has modernized its industry to match market demands. Brownfields became the primary source for new development in the city because of a lack of greenfield land left to develop (Gilman, 2016). La Crosse also has a vibrant downtown waterfront which was redeveloped from former industrial sites over the last 20 years.

The city undertook a few flagship waterfront redevelopment projects on brownfields. The Riverside Redevelopment project, completed in 2001, includes CenturyTel’s headquarters and eight other properties. After a $1 million grant from the former Wisconsin Department of Commerce, DNR funds for assessment, and city funds for cleanup of the property, the site was a success. The CenturyTel project alone is worth $25 million and employs more than 650 people full time (DNR, 2001; Hubbuch, 2015). The Riverside Redevelopment Project was successful because of engagement from multiple levels of government and investor interest (DNR, 2001). La Crosse performed initial environmental assessments of the property, and the DNR assisted in funding site cleanup. The city then began working with CenturyTel to start construction on the new development (DNR, 2001). To create an appealing reduced-risk site for developers, the entire process of investigating and cleaning was funded exclusively by the city and state (DNR, 2001). The Riverside Center, located a few blocks south of the Riverside Redevelopment project, is another success. It’s a mixed-use property containing commercial, retail, and office space. The entire finished development employs 2,000 people and adds $1.2 million in property tax revenue (Wisconsin Downtown Action Council, 2012).

Despite previous successes, La Crosse has encountered difficulties with new waterfront brownfields redevelopments. Currently, five waterfront brownfields properties are under consideration by the city (Gilman, 2016). One of these sites, located farther from the downtown, has high potential for residential development because of its scenic waterfront view and location. However, this former dump site borders an active industrial property (Gilman, 2016). These conflicting land uses have slowed progress on developing the property because the presence of industrial activity increases uncertainty around the marketability of residential units (Gilman, 2016). This uncertainty, coupled with expected high initial site cleanup costs and the lack of a financial partner, and a long application period have deterred developers so far.

Despite the difficulties associated with funding new brownfields redevelopments, La Crosse has found success with ongoing projects. The city intends for the former Patros Steel property, strategically located between the city brewery and downtown, to become either a marina or a public performing arts center (Gilman, 2016). In 2012, the city received a $250,000 cleanup grant from the DNR and remediation is now complete (DNR, 2012). Although assessment and cleanup being complete, this property is still in the planning stages (Gilman, 2016). This indicates the long timeframe of waterfront redevelopment projects.
La Crosse’s waterfront brownfields redevelopments have created jobs and establishments. In 2006 and 2007, the Riverside Center opened its first two buildings. The event of these buildings growing rapidly could explain the 1,239% increase in jobs in 2008. This argument is further supported when looking at the number of new establishments in 2006 and 2007. Each year shows one additional establishment, indicating that there was no additional development or process that could be causing the massive increase in jobs in 2008. Below is a graph illustrating the annual percent change in the number of businesses lying within the boundaries of the LaCrosse Waterfront Redevelopment District, showing the rate of growth within the area compared to the rate of growth for LaCrosse, Wisconsin, and the U.S. as a whole:

Figure 7: Percent Change in Number of Businesses in La Crosse Waterfront Redevelopment District, 1997-2013
Milwaukee
In the late 1990s, the city of Milwaukee began an ambitious project to redevelop the Menomonee River Valley. Since this project’s inception, it has been well-studied and is an exemplary waterfront brownfields redevelopment that studies overwhelmingly conclude is a success (DeSousa, 2011; Peterangelo and Henken, 2014).\textsuperscript{12}

The Menomonee River Valley project has a history stretching back to the 1970s. This longer history allowed public officials to focus on redeveloping the whole former-industrial zone along the Menomonee River, rather than one or two specific contaminated sites. This land had been developed as predominantly industry in the late 19\textsuperscript{th} century because of its access to commercial water and rail transit. Beginning in the 1950s, with the expansion of the Federal Highway System, businesses began leaving the valley in central Milwaukee for less expensive suburban land. Employment in the area dropped from 50,000 in 1920, to 20,000 in 1970, to only 7,095 by 1997 (DeSousa, 2011). The city of Milwaukee undertook varying amounts of effort to renew the area since the 1970s and accelerated in 1988 under Mayor John Norquist with the construction of some major amenities and the conversion of former warehouses into lofts (DeSousa, 2011). In 1998, Milwaukee’s development department and key stakeholders came together to realize the need for

\textsuperscript{12} Although McCarthy (2004) notes that the case also represents some of the issues that can come from focusing public redevelopment funds on the most marketable, as opposed to the most contaminated, brownfields: that in some cases this can exacerbate urban inequalities.
“family-supporting jobs” in the area, rather than only residences (DeSousa, 2011). This prompted the planning process that eventually yielded the Menomonee River Valley redevelopment.

The 1998 meeting and report were followed by a five-year planning process that brought together business, NGOs, and governmental stakeholders. While initial planning began in 1998, construction on the first site did not begin until 2003 (DeSousa, 2011). In 1999, to formalize the stakeholder group behind the initial report, the City of Milwaukee along with private partners formed the Menomonee Valley Partnership (MVP), a public-private partnership. The MVP was made up of a 20-person board of directors from across the public and private sectors to leverage resources and support in the area (DeSousa, 2011). During this initial period, the MVP was supported by a $200,000 brownfields redevelopment pilot grant from the EPA that the city of Milwaukee received in 1998. This allowed the MVP to work to achieve 501(c)(3) status (DeSousa, 2011). By 2000, the MVP hired its first full-time staff person to facilitate planning.13 The planning process took off after a local NGO, the Sixth Street Community Health Center, applied for and received a $250,000 EPA sustainable development grant, which it used to implement a sustainable design challenge in 2002. This challenge yielded the results used for the first property redeveloped in the Valley (DeSousa, 2011).

After this initial planning process, the city of Milwaukee assisted the redevelopment by using a number of financing mechanisms to lower the economic risk for developing the site in 2004. In August 2003, using eminent domain, the city acquired 140 acres of former industrial land from the Chicago-based CMC Heartland Partners for $3.5 million (DeSousa, 2011). Following this purchase, the city established a $16 million TIF district to pay for remediation and public-infrastructure provision. Alongside this TIF district, the city has vigorously applied for remediation funds, raising over $24 million in public grants and private donations (DeSousa, 2011).

The time and resources invested in the site from public and private partners paid off. By 2009, MVP reported that 300 acres of contaminated land had been redeveloped, bringing in 20 new companies and prompting the expansion of seven companies.14 This business growth created 4,200 new jobs (MVP, 2009). The MVP found that every $1 of public investment yielded $3.60 in private investment, with property values more than doubling between 2002 and 2009 (MVP, 2009). As of 2016, over 39 companies (with 5,200 jobs) located to the area—with many moving in amid the economic recession of 2009 (DeSousa, 2011; MVP, 2016). The site has also incorporated an impressive amount (45 acres) of inner-city green space (MVP, 2016). Moreover, the TIF district was on target to meet its $45 million goal by 2012, and over 1,100 additional jobs had been created (DeSousa, 2011). As of 2014, because of local growth, the private funds leveraged per $1 of public investment yielded $3.60 (MVP, 2016).

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13 This illustrates the amazing amount of unpaid work that went into the project before 2000. MVP estimates that as of 2016, “more than 250 organizations and 450 individuals have given pro bono time by serving on boards, committees, and working teams, while thousands of individuals have volunteered at Valley events” (MVP, 2016).

14 Although as DeSousa observes (2011: 11), most of these firms have relocated from other areas of Milwaukee or Wisconsin, so net job growth depends on the scale of analysis.
investment had risen to $4.20 (Peterangelo and Henken, 2014). The site is nationally recognized as a redevelopment success through awards and studies.

The program has continued to grow, leveraging an increasing amount of private money per $1 of public money invested and attracting new firms and employment. These benefits have grown over a period of 13 years and are on an upward trend. Many projects earlier in the post-redevelopment phase than the Menomonee Valley may see the greatest benefits of their projects in the years to come. Below, the graph describes the percent change in the number of jobs within the Menomonee Valley Redevelopment District, highlighting the rate of growth (and decline) of jobs within the district in contrast to the rate of growth for Milwaukee, Wisconsin, and the U.S.

Sheboygan
Sheboygan has a close connection with waterfront brownfields redevelopment. These sites are the core of the city’s development plan because it has limited greenfield sites onto which it can expand development (Pelishek, 2016). The C. Reiss Coal Company historically had a shipping facility in the city on the shores of Lake Michigan. When it became abandoned, organic compounds, coal residue, arsenic, and chloride were left behind (DNR, 2006). Sheboygan invested $12 million and the state invested more than $4 million to clean and develop the site (DNR, 2006). The C. Reiss Coal Company property was turned into the Sheboygan Harbor Center or South Pier and is now considered the signature project for the city. It has proven to be successful both economically and environmentally (Pelishek, 2016). The Blue Harbor Resort alone created 350 full-time jobs and brought consumers, tourists, and new residents to the area (DNR, 2006).
Trends in job creation and number of establishments demonstrate economic growth from the South Pier project. The Blue Harbor Resort was one of the first establishments to open on the property in 2004. In 2006, the data shows an 854% increase in the number of jobs from 22 to 210. We believe this indicates the success of the first establishments of the South Pier project in drawing consumers to the area, thus increasing the opportunity for additional establishments to open and create new jobs.

Sheboygan’s waterfront brownfields redevelopment teaches us a lesson similar to those of our other case studies. Public funding of assessment and cleanup promotes developer interest by reducing the risks associated with uncertainty of contaminants and costs. This can be seen in the South Pier project because of the substantial developer interest in the property after the effort was put in to clean the sites, but not before these cleanup efforts were made. Below, the percent change of the number of businesses within the district is illustrated.

Figure 10: Percent Change in Number of Businesses in Sheboygan Waterfront Redevelopment District, 1997-2013
Racine

Racine has limited land available to develop beyond city limits and must look to its urban core of waterfront brownfields properties for growth (Sadowski, 2016). Racine has a history of heavy-industrial land use ranging from manufacturing to dry cleaning and has seen past success in developing its contaminated waterfronts. One key redevelopment was the Gaslight Pointe project in the late 1980s, which was facilitated with a $70 million investment from a private Chicago developer (Hayes, 1989). This project has successfully created 15 town homes, 52 condominiums, and multiple hotels and restaurants (Brownfields Study Group, 2014).

The RootWorks project is Racine’s current effort. This project has been ongoing since 2012, with the goal of redeveloping 325 acres of brownfields property in the urban core of the city (Vandewalle & Associates, 2013). The project is a joint venture between private and public interests garnering nearly $900,000 in grants in 2015 (Wicklund, 2015). The entire project is broken into smaller units with different end-use visions, such as the 20-acre Machinery Row Redevelopment District, which will be a mixed-use property, and West Bluff Overlook, which is poised to become a public park (Vandewalle & Associates, 2013). Each redevelopment is in varying stages of implementation with Machinery Row waiting for zoning approval and nothing currently under construction (Sadowski, 2016).

The RootWorks project is being funded through diverse sources. Funding agencies include the EPA, DNR, WEDC, TIFs, and private investors (Sadowski, 2016). The city found that changing its historic tax-credit program, giving developers credit for developing sites that had not been built...
upon since 1936 (Sadowski, 2016). Support from the DNR and other agencies has been incredibly helpful in moving the projects along and has allowed for creative solutions to many problems faced by the city (Sadowski, 2016). However, since the RootWorks project is still in the early stages of implementation and cleanup, the effects this project has had on job growth cannot be seen.

Figure 12: Percent Change in Number of Businesses in the Machinery Row Redevelopment District, 1997-2013
Figure 13: Percent Change in Number of Jobs in the Machinery Row Redevelopment District, 1997-2013

Figure 14: Number ofJobs across Top Four Industries in the Machinery Row Redevelopment District, 1997-2013
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