FOLKS AS EXPERTS: INSPIRING COMMUNITY PARTICIPATION IN TRANSFORMING BROWNFIELDS INTO GREEN SPACES

by

SHAOTIAN LI

(Under the Direction of Katherine Melcher)

ABSTRACT

Today, there is an increasing interest in reclaiming contaminated sites as public green space. In most cases, a brownfield redevelopment project involves a variety of professionals, agencies and community members. However, community members, including residents who are immediately impacted by the redevelopment process, are not often given the opportunity to participate in creating visions or developing design initiatives. Brownfield redesign projects, especially those that create green spaces, can either have a galvanizing effect on a community or drive a wedge through it. This thesis aims to explore to determine how landscape architects can better engage community members to participation in the design process when repurposing brownfields as green spaces. Following literature review, case studies, discussion and an integrated participation guideline will take place.

INDEX WORDS: landscape architecture, brownfield, green space, community participation, participatory design

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BE, Beijing University of Civil Engineering and Architecture, China, 2015

A Thesis Submitted to the Graduate Faculty of The University of Georgia in Partial Fulfillment of the Requirements for the Degree

MASTER OF LANDSCAPE ARCHITECTURE

ATHENS, GEORGIA

2018

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DEDICATION

This thesis is dedicated to my parents and all of the hard working community designers.

ACKNOWLEDGEMENTS

I wish to thank Katherine Melcher, for her guidance, encouragement and unflagging patience. I also appreciate all committee members, Sungkyung Lee, Jack Crowley and Jennifer Lewis, to donate their time and expertise for my research. I also wish to thank my parents for their support. Last, I wish to express my thanks to Georgia Harrison Hall, Carmine Fischetti, Donna Gabriel and everyone in the College of Environmental and Design for their help in my three years at the University of Georgia.

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CHAPTER 1

INTRODUCTION

1.1 Summary of the Research Problem

After World War II, numerous new products were created, industries in the United States expanded, and industrial land use in cities grew. The industrial manufacturing boom ended during the recession of the late 1970s, leaving hundreds of thousands of potentially contaminated sites abandoned in urban areas (De Sousa 2008). These sites, called *brownfields*, have a negative impact on the environment and the people living in the surrounding areas (United States Environmental Protection Agency 2018). However, brownfields do exhibit potential for public reuse and business opportunities due to their advantageous locations. Brownfields can help balance regional land-development process, so that fewer virgin greenfields are despoiled and at the same time underutilized land can be regenerated (Hollander, Kirkwood and Gold 2010). Over the last thirty years, urban planners, urban designers, landscape architects, and researchers have been working to revitalize urban areas by redeveloping brownfields.

In most cases, a brownfield redevelopment project involves a variety of professionals, agencies, and community members. It is generally acknowledged that involving the appropriate parties from the beginning is a crucial aspect of brownfield work (De Sousa 2008; American Planning Association 2010). Often, the initial organizing group is a professional team that includes environmental engineers and consultants, architects, and landscape architects. They

create a community outreach plan to engage community members, including neighborhood residents and other stakeholders. Then they involve governments, agencies, and other support services for financial and legal support. Once these phases have been completed, a brownfield site can be redeveloped, starting with remediation (Hollander, Kirkwood and Gold 2010).

Generally, landscape architects play important roles in brownfield redevelopment, especially in the remediation and redesign phases. One crucial role of the landscape architect is to address some of the inherent conflicts and tradeoffs that exist when repurposing contaminated land. Landscape architects provide remediation suggestions, initial creative visions, and design strategies based on stakeholders' needs, as well as interactions and communications with local communities.

In addition to bringing together professionals, the organizing group must establish a community outreach plan to engage and inform the community about the project from the beginning. A project with an effective community outreach plan will receive great community support (Bartsch 2003). Ideally, if community members, especially local residents, participate actively in the project, their visions for the space as future users will be clearly reflected.

Brownfield sites can be repurposed for housing, commercial use, light industrial use, recreation, open space, or a combination of these uses (Sarni 2010). With the rapid growth in housing development and revitalization, many cities have initiated projects to transform brownfields to housing. More recently, however, a growing number of cities have started to convert brownfield sites into parks and other green spaces (Dorsey 2003; De Sousa 2006). These projects, which tended to attract less attention from both the government and research sectors than housing projects in the past, are now part of the strategy for the comprehensive improvement of the urban environment. Such projects have enormous potential for improving

city environments by enhancing an area's recreational functions, ecological conditions, and aesthetic appearance. Several studies have examined the positive impact of the planning and implementation of such projects on cities (De Sousa 2008).

Unlike other types of market-oriented brownfield redevelopment, the creation of green spaces from brownfields requires the engagement of community players. The types of involvement can vary—including consultation forums, design charrettes, working groups, committees, and public meetings—but the involvement of community residents in the whole redevelopment process is crucial in both the short and long term. Therefore, opinions from the community must be considered seriously during the redevelopment process (Moffat and Hutchings 2007; De Sousa 2014).

For many brownfield projects, community involvement mainly focuses on voluntary cleanup programs and participation approaches like public hearings and public meetings. Some community members, including residents who are immediately impacted by the redevelopment process, are not given the opportunity to participate in creating visions or developing design initiatives. Brownfield redesign projects, especially those that create green spaces, can either have a galvanizing effect on a community or drive a wedge through it (Bartsch 2003). Community involvement in every step of the redesign process can make the difference, enhancing the environmental, social, and economical sustainability of brownfields.

1.2 Research Questions

This research aims to determine how landscape architects can better engage community members to participate in the design process when repurposing brownfields as green spaces. The following questions will be discussed:

1. What are the current processes for repurposing brownfields as green spaces? What

lessons have been learned from them?

2. What are the major design objects and elements of public green spaces? What impacts could community participation have on these projects?

3. What is the current process for brownfield redevelopment? What approaches have been implemented to engage the community in the process in previous projects? Did these approaches work?

1.3 Purpose and Significance

1.3.1 Purpose

The purpose of this thesis is to analyze current participation methods and practices in repurposing brownfields as public green spaces. By doing so, I will create a recommended participation framework for transforming brownfields. I hope this research will increase understanding and awareness about the need to solve landscape architecture design problems in a more socially aware and locally responsive way. Although every brownfield site has unique conditions and contexts, I hope this proposed framework can be adaptively applied.

It is noted that there are plenty of "calls" about engaging community in brownfield projects, but limited details about the pre-design participation that community could be engaged. Although EPA clarifies that it is required to involve the community in cleanup and implementation processes, however, this participation is more like a standard policy. Also, research has shown that community members, in some circumstances, were not that interested in the contamination issues because they either trusted the professionals to do remediation or they were more interested in the reuse options decision-making participation (Spiess 2008). This seems make brownfield projects no differ than other participatory design projects, however, I think this actually makes participation work harder than the general ones. Because professionals

may spend more time to explain to or even educate the community about brownfield site situations, with the assumption that they may not be aware of how contamination may affect the decision for future reuse.

Thus, this research will not go into detail about participation in remediation but into the design itself. A participation framework will be developed, intended as a guide and starting point, to be tested through further research and application.

1.3.2 Significance

In the past few decades, there has been a growing understanding that brownfields should be reclaimed for more productive uses. Since the 1970s, the redevelopment of brownfields in North America and Europe has received wide governmental support (De Sousa 2003; Dixon et al. 2007) Policies and redevelopment efforts have been made to encourage cleanup and find new uses for brownfields. According to the Environmental Protection Agency's website, over 38,700 properties per year have been enrolled for cleanup and redevelopment using Brownfields state program funds since 2006, and over 1,000,000 acres are now ready for reuse (United States Environmental Protection Agency 2018). Reuse programs include industrial, commercial, residential, and recreational uses.

According to the Concerted Action on Brownfield and Economic Regeneration Network, brownfields are derelict or underused sites that are mainly located in fully or partly developed urban areas (Hula, Reese, Jackson-Elmoore 2012). In rapidly urbanizing areas and dense cities, brownfield reuse helps reduce land waste, in addition to aiding in the new development of undisturbed areas. Converting brownfields into new developments and repurposing them for new uses can help balance regional land development processes so that fewer natural areas are developed (Hollander, Kirkwood and Gold 2010).

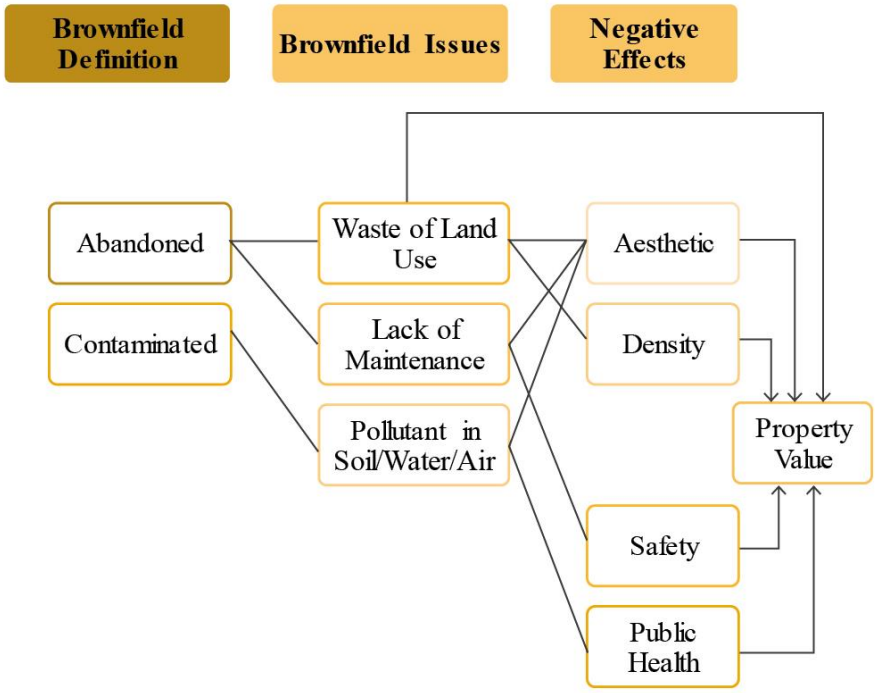

Figure 1. Brownfields: Definitions, issues, and negative effects (Hollander, Kirkwood and Gold 2010; Hula, Reese, Jackson-Elmoore 2012; Berman, Forrester 2013; Author 2018)

Any brownfield site, no matter its level of contamination, has potential harmful issues to the environment and public health. Contaminated groundwater or soil may contain toxic properties that pose a variety of health threats (Hollander, Kirkwood, Gold 2010, 24-30). Furthermore, since brownfields are usually abandoned, some become locations for crime and vandalism (Berman, Forrester 2013). These characteristics mean that brownfield sites have low property and aesthetic values (see Figure 1).

The potential of turning brownfields into green spaces (parks, playgrounds, informal green spaces, or mixed-use projects with green space) has been overlooked compared to other types of reuse. Numerous brownfields have been recycled and developed for commercial or residential uses in order to provide economic benefits to the community through tax revenues and jobs (De Sousa 2003). Today, there is also a growing recognition that brownfield sites have the potential to provide enormous social, environmental, and economic opportunities to a city by

incorporating green landscapes into the built environment (De Sousa 2014). Brownfield redevelopment, particularly in the creation of green space, improves environmental quality, promotes public health, reduces crime, enhances social connections, and increases property values (Table 1). However, researchers claim that the quality of the green space design matters (Hall 2015; Klenosky et al. 2017). If a reclaimed site is not well designed and does not truly benefit the community, people will not be interested in visiting it. Thus, good design is essential when transforming brownfields into green spaces.

	Brownfield Issues					
Green Space Benefits		Safety Issue	Aesthetic Issue	Public Health Issue	Waste Land Use	Low Property Value and Community Satisfaction
	Make City Safer	X		X		X
	Make City Greener		X	X	X	X
	Make City Healthier			X		X
	Make the Social Bond Closer	X		X	X	X

Table 1. Solving brownfield issues through the creation of green space (Author 2018)

Brownfield transformation is not easy, and there is not just one solution. According to Garvin, decisions for adaptively reusing brownfields are influenced by the opportunities and constraints of specific sites, their surrounding communities, and current design styles and trends (Garvin 2011). This means the transformation is complicated but noteworthy in future practice and research.

It is concluded that reclaiming brownfields into green space is beneficial because it enhances public health and guarantees city safety, integrating urban land use, as well as increasing community satisfaction and property value. Since the community members, especially the residents are immediately impacted by the redevelopment, as well as users after the

redevelopment is implemented, it is concluded that involving the community into brownfield to green spaced design is significant.

1.4 Methodology

This research focuses on three key concepts: community participation, brownfields, and public green spaces. Figure 2 shows the information required to understand each of these areas, as well as their relationships with one another.

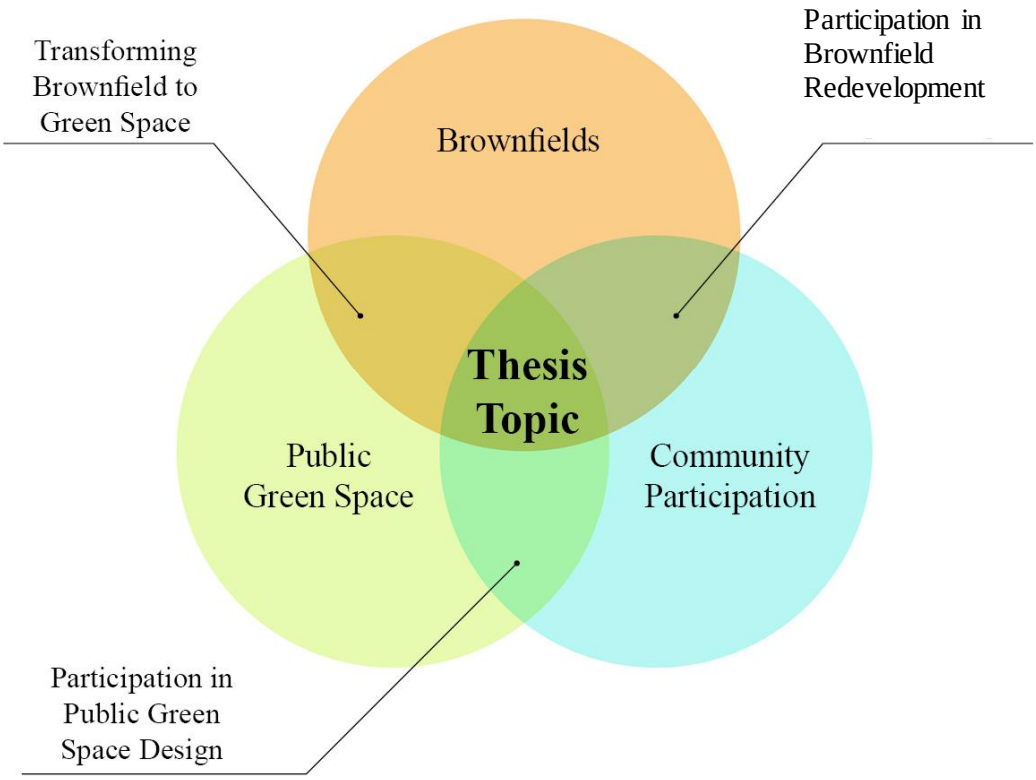

Figure 2. Theoretical information matrix (Author 2018)

After deconstructing the research questions, I will address the following subjects:

1. What is the theoretical background of this research?

In chapter 2, the definition of brownfield, public green space and community participation are introduced. The challenges and opportunities of brownfield sites, and the previous studies for participation in design fields are also discussed.

2. What are the connections and processes?

In order to have an understanding of how participation work in brownfield to public green space design, the current process of brownfield redevelopment and methods of public interest design are introduced in chapter 3. This chapter also introduces in what steps do communities get involved in brownfield redevelopment process, and the current situation for participation in public green space design. By collecting process and methods from the three concepts, a participatory brownfield to green space design framework will be developed for further discussion.

3. What are the current practices regarding participation in the brownfield to green space design?

In chapter 4, three brownfields to green space case studies are selected and analyzed. First, the background of each project is collected, including site backgrounds, design features and strategies. Second, the community participation significance, including identifying community members, summarizing participation process and methods, and discussing the challenges, opportunities and other comments are discussed. For each case, a participatory framework is developed based on the collected data and framework created in chapter 3. Next, there is a discussion about lessons learned from the three case studies. Key factors for participation in brownfield to green space projects are discussed.

4. What are the recommendations for brownfield to green space design in the future?

In chapter 5, the unique issues of participation in brownfield to green space is addressed. Then the participants, especially design and planning professionals, are introduced. Finally, recommendations of involving community into brownfield to green space design are given. The proposed participation flow is recommended as a guideline for

further projects.

5. What are the conclusions and limitations for this research?

   The last chapter focuses on the conclusions and limitation for this research. Again, the unique issues of participation in brownfield to green space, as well as how this research addressed those problems are mentioned.

Using archival research methods, I will collect general data to build the structure of my thesis. The case studies will provide me with an in-depth understanding of brownfield reuse projects, which will allow me to conduct a comprehensive analysis of the approaches that I will apply to answer my research questions. I will use multi-tactic qualitative research and case study research methods to develop this thesis.

1. Archival: literature, photographs, design plans, and diagrams for documentation and interpretation

2. Case studies: in-depth case study research, analyzing the characteristics, strengths, and weaknesses of each case study

   Three cases: Historic Fourth Ward Park, South Waterfront, and Lafitte Greenway are selected and studied in order to:

   (1) Better understand the implementation of participation methods in brownfield to green space projects;

   (2) Demonstrate the community's role and the influence of community participation in the design decision; and

   (3) Examine effective participation methods that could be used to promote brownfield transformations, as well as the challenges specific to these projects.

3. Synthesis: a combination of the three concepts (brownfield, public green space,

and participation) to create a synthesis of the new participation flow

I will also look at the design challenges, practical approaches, and impacts presented in the case studies. Finally, I will produce a participation framework and a list of participation recommendations for future projects.

1.5 Limitations

Though the reuse of brownfields is a global challenge, this research will mainly focus on research and practice in the United States. The case studies are all located in the United States, and the brownfield redevelopment framework will be created based on the current process studied by the United States' Environmental Protection Agency (EPA).

A limitation of this research is that most of the data are collected from secondary (books and articles) and tertiary sources (online news). The researcher didn't take part in one of the projects in the case studies. More primary sources, including interviews and surveys, are needed for further research.

CHAPTER 2

THEORETICAL BACKGROUND

In this chapter, I will introduce the definitions of brownfields, public green space design, and public participation in design, the three fundamental concepts in my research.

2.1 Brownfield Redevelopment

Every brownfield project is unique because of the site's history and contamination conditions. In this section, I will address the following questions:

1. What is a brownfield?
2. What are the challenges and opportunities of brownfield sites?

The most commonly used definition of brownfields in the United States is the one presented by the Environmental Protection Agency (EPA) when it formally launched its Brownfields Action Agenda (BAA) in 2006. The EPA defined brownfields as "properties on which expansion, redevelopment, or reuse may be complicated by the presence, or perceived presence, of contamination." It is estimated that there are more than 450,000 brownfields in the United States (United States Environmental Protection Agency 2018).

In rapidly urbanizing areas, brownfields can be employed for new development and uses that would otherwise force developers to spread into undisturbed landscapes far outside urban centers (Hollander, Kirkwood, Gold 2010). Bjelland believes that reclaiming brownfields is a "critical urban environmental challenge" to sustainable communities (Bjelland, 2004). Moreover,

research shows that brownfield redevelopment is not only an American challenge, but also an international one. Scholars in Italy believe a positive and constructive vision about dismissed industrial areas is needed because these sites have the potential for new urban uses and can provide a more complex reflection of the whole city (Parente, Sedini and Simonelli 2016). Hunter, from the United Kingdom, stated that land has become increasingly scarce around cities, making brownfields more economically attractive for new development (Hunter 2014).

It is important for designers to be on board in a brownfield project because such projects require interdisciplinary design strategies and creative programs. Designers, especially landscape architects, can address some of the inherent conflicts and tradeoffs that exist when repurposing contaminated land and buildings. They establish the initial creative vision and the project's identity, as well as cooperating with the community and informing the project team about the community's vision for the site (Hollander, Kirkwood, Gold 2010).

Therefore, it is concluded that brownfields are properties with challenging reuse potentials. Although brownfields may contain contaminants that complicates the development process, there are opportunities to redevelop such sites because it could not only integrate urban land use, but also reduce natural disturbance outside the urban areas.

2.2 Public Green Space

In this thesis, a public green space is defined as an open space that contains natural settings, some specific programs and provides public access during its service hours. Such spaces can be parks with formal boundaries or informal green spaces with ornamental and recreational functions. From large pleasure grounds to sustainable open spaces of various sizes, public green spaces share the ideal of protecting nature and enhancing social well-being (Cranz 1997). Several types of public green spaces are shown in Figure 3.

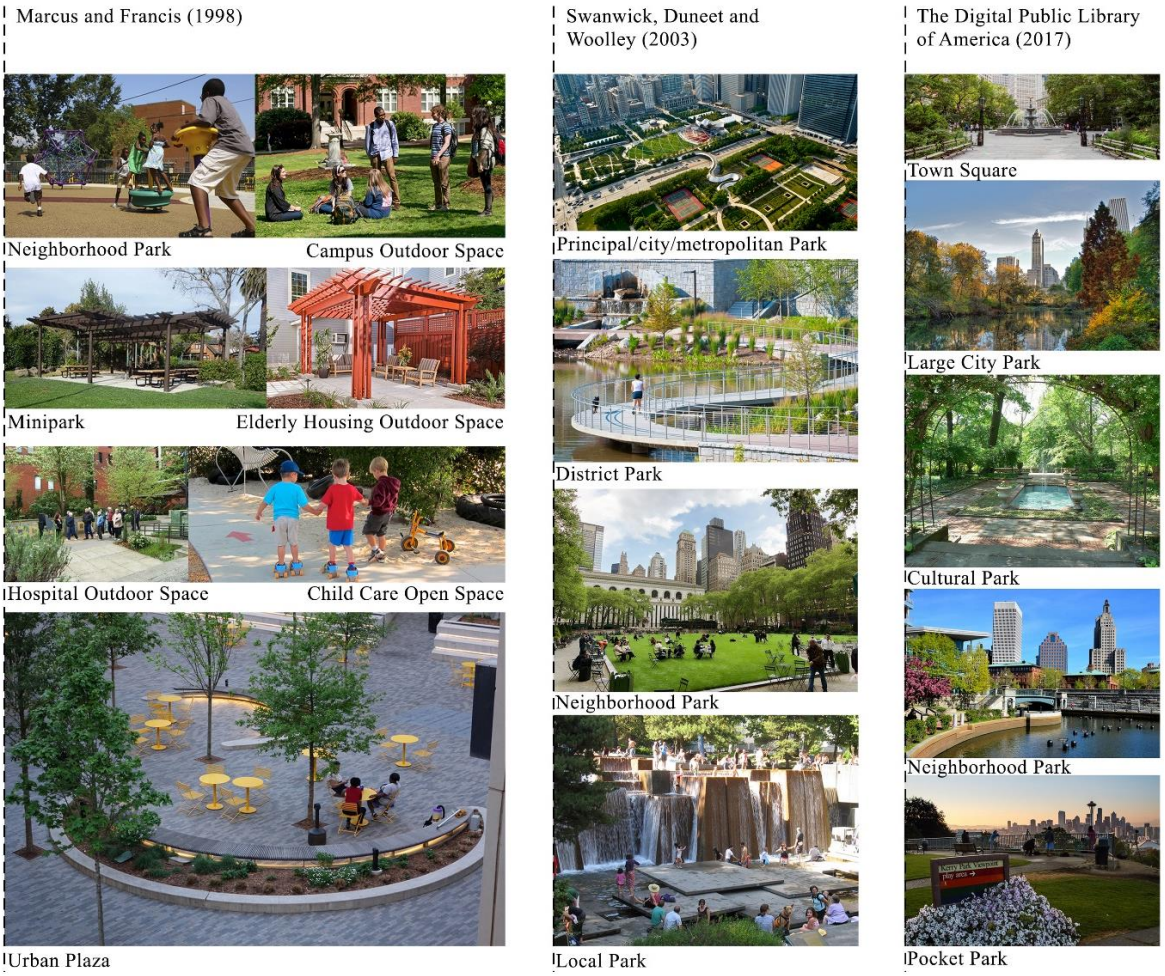

Figure 3. Public Space Typology (Marcus and Francis 1998; Swanwick, et al. 2003; The Digital Public Library of America 2017; Author 2018)

2.3 Public Participation in Design Fields

There are various related terms for public participation, including community design, public interest design, and participatory design. The idea of involving the community in design projects dates back to the Third World community development, urban renewal, and civil rights movements of the 1950s and 1960s (Midgley 1986).

Comerio (1984) defined community design as "the attempt to identify and solve environmental problems in which the client is a special-interest group and the problem is social, economic, or political, as well as physical." Compared to traditional design, which is charged

and operated by designers, community design comes from the community, which becomes part of the decision-making. Sanoff supplemented the definition of participation by calling it "direct public involvement in decision making processes where people share in social decisions that determine the quality and direction of their lives" (Sanoff 2000, 10).

In *Community Participation Methods in Design and Planning*, Sanoff (2000) explained that public participation can be viewed in four categories: (1) the very beginning of goal setting, (2) sharing and understanding programming, (3) working from awareness and perception to create a program for the actual physical design, and (4) implementation. This requires community members to stay involved throughout the process and share responsibility with professionals in order to see results (Sanoff 2000, 13-14).

According to Sanoff (2000), community-based planning processes often end at or before the design process, which means the community is only involved at the beginning, rather than during the whole process. For the following reasons, community design should involve the community throughout the entire process.

The underlying premise, according to Umut Toker (2012), is that people are experts on their own needs and aspirations. Professionals need to work with them to translate those wishes into reality, using their professional expertise. Toker (2012) demonstrated that involving individuals and groups in decision-making about their built environments is strenuous but rewarding because it means that the design will be well suited to the needs and wishes of the community (Toker 2012).

Another term related to participation is public interest design, which Abendroth and Bell (2016) introduced in *Public Interest Design Practice Guidebook*. Public interest design is defined as "a practice that first and foremost engages people in the design process." It is

differentiated from other design practices because of its deep commitment to community engagement, public participation, and democratic decision-making. The results of public interest design are derived directly from the community or audience—individuals who share a common quality, for whom the designs were created (Abendroth and Bell 2016).

In the article "A Ladder of Citizen Participation," Arnstein concluded that citizen participation is simply a categorical term for citizen power. The depth of participation can be categorized into three degrees and eight levels, as shown in Figure 4. The higher the level, the more power citizens have in the participation process (Arnstein 1969).

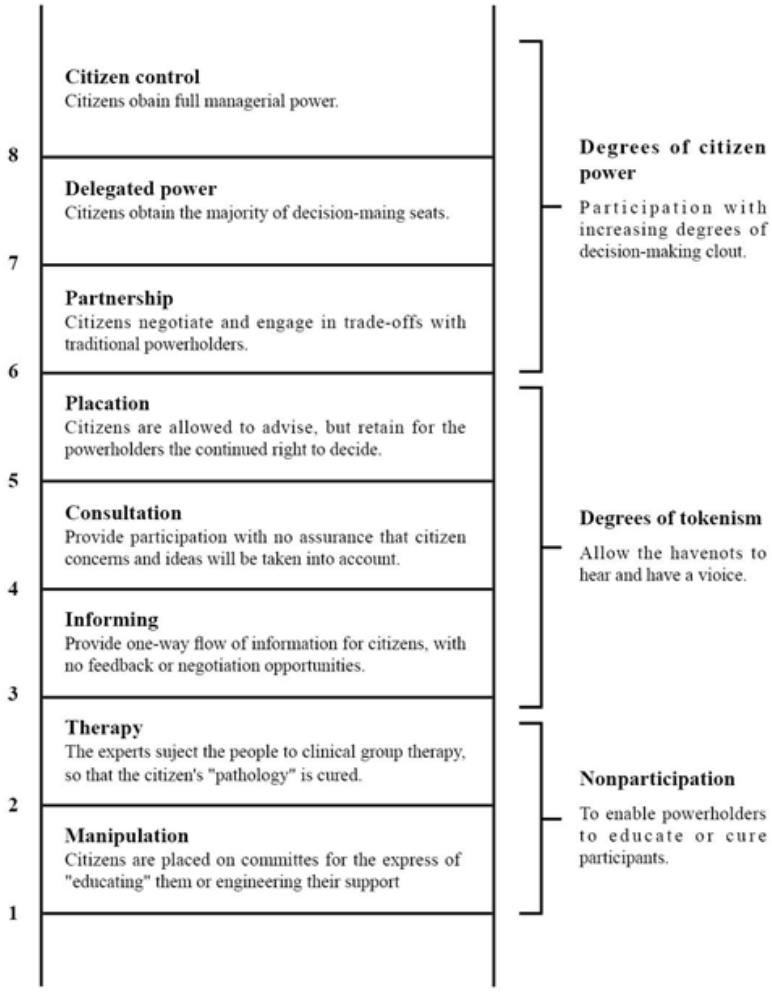

Figure 4. Eight Rungs on a Ladder of Citizen Participation. (Arnstein 1969)

In Comerio's research, the importance of the client—and thus of interest groups—in community design projects is stressed. Sanoff indicated that the community is part of the decision-making body, which means it must have opportunities for partnership rather than just information. Further, Toker explained that working toward community design is complicated but worthwhile because it means that the design will serve the users better. Abendroth and Bell also argued that the community must be first engaged in the design process so that the design result is derived from the community's shared quality. This may mean that designers have to negotiate with the community. Therefore, it is concluded that, for this research, "the fullest kinds of community participation" in design fields are taking clients as an important part in decision-making, engaging the community from the beginning to the implementation process, and driving design ideas directly from the community.

Also, in terms of providing more citizen power to the community in participation process, it is recommended that, for this research, "the fullest kinds of community participation" shall share the idea of "degrees of citizen power", which are high participations levels like partnership, delegate power or citizen control in Arnstein's research. Since the definition of public interest design has common characteristics of high participation level, as well as "the fullest kinds of community participation", the process and methodology of public interest design is selected as an important reference for participation process development.

CHAPTER 3

CONNECTION AND PROCESS

In this chapter, I will discuss the connections among brownfields, public green spaces, and public participation by focusing on the following topics:

(1) participation and process in brownfield development;

(2) design considerations of public green space;

(3) process and methods of public interest design;

(4) proposed participation framework for brownfield to green space project.

I will develop an information checklist based on this chapter as an evaluation matrix for the selected case studies. The proposed participation framework will be further developed after analyzing the case studies.

3.1 Brownfield Redesign: Process and Participation

3.1.1 Brownfield Redesign: Process

In this section, I develop an understanding of public participation in the brownfield redesign process by studying brownfield redevelopment processes worldwide and building a brownfield development process framework. Although each brownfield site is unique, a systematic approach is needed to determine which remediation techniques or strategies should be applied to a specific brownfield in order to promote projects and avoid unexpected results and wasted time and money (Reddy et al. 1999). Therefore, it is necessary to study different

processes and summarize an approach that considers community involvement. In this section, I will study the following brownfield redevelopment process models:

(1) Environmental Protection Agency (EPA) brownfield redevelopment process (see Figure 5)

(2) American Planning Association (APA) community-based brownfield redevelopment process (see Figure 6)

(3) Regeneration of European Sites in Cities and Urban Environments (RESCUE) brownfield regeneration decision chart, Germany (see Figure 7)

(4) Concerted Action on Brownfield and Economic Regeneration Network (CABERNET) brownfield regeneration process, United Kingdom (see Figure 8)

The EPA and APA models are the major references for my brownfield development process framework. The EPA is an American government agency that studies environmental issues and enforces regulations. The APA has done significant research on community-based brownfield redevelopment, including public participation in the brownfield redevelopment process.

The RESCUE and CABERNET models supplement the framework, as they specifically include citizen participation/involvement in the redevelopment process. The RESCUE model shows the connection between land quality, planning, development, and citizen participation milestones. It also conveys the idea that citizen participation is as an important a consideration as land quality and planning and development in brownly field regeneration. The CABERNET model provides multiple alternatives for project vision planning. And community involvement occurs in both the beginning phase and realization phase in the CABERNET model. The processes for each of these frameworks are summarized in the following figures (See Figure 5-8).

These models include shared processes, from which I have derived the basic development steps for brownfield redevelopment.

1. Vision

A project's vision should be created by professionals and the community during the predevelopment phase. The four models analyzed here share this starting point: the APA, CABERNET, and RESCUE models call it the "project vision," while the EPA model calls it a "redevelopment idea." Even if the site analysis has not yet been conducted, the vision, including basic development ideas, can be generated. This is the basis for the next steps in the project, and it is essential that community involvement takes place at this point (APA 2010; Grimski, Dosch and Klapperich 2012). The participation milestones in this phase are agenda setting, issue filtration and definition, and forecasting and setting objectives (Sarni 2010).

2. Site Analysis

After creating the vision, the next step in the redevelopment process is analyzing the site. According to the APA model, it is critical to collect information from both public and local resources. It is also helpful to generate a neighborhood-specific inventory, as some local issues are not included in public data and may only be available from community members (APA 2010). Data should be collected on existing buildings and infrastructures, legal and technical feasibility, financing and market conditions, and other factors (Sarni 2010; EPA 2006; Grimski, Dosch and Klapperich 2012).

Once the site analysis is done, a site inventory should be created. It should include regional and local planning, zoning, topography, liability and ecological restrictions, demography, historic and cultural literature, and economic, environmental, and social reports (APA 2010). Depending on the vision, current data resources, and the results of the site analysis, the inventory

Figure 5 EPA Process (EPA 2006)

Figure 6 APA Process (APA 2010)

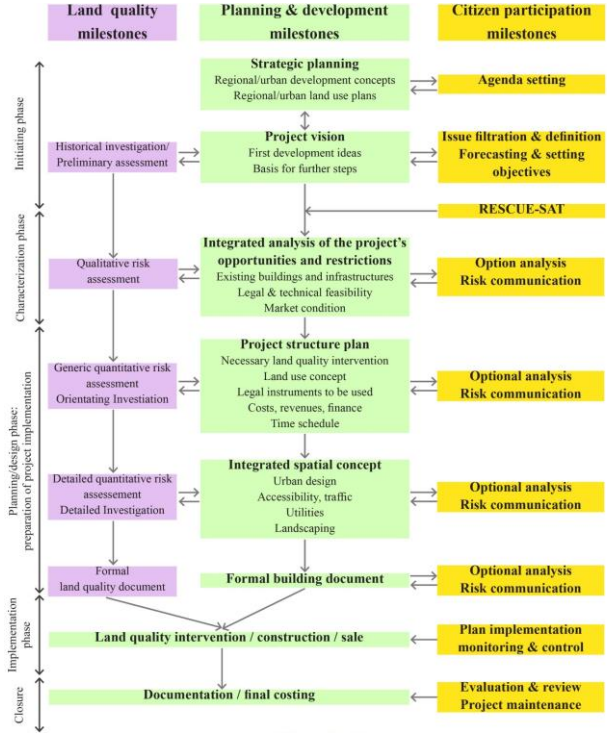

Figure 7 RESCUE Process (Sarni 2010)

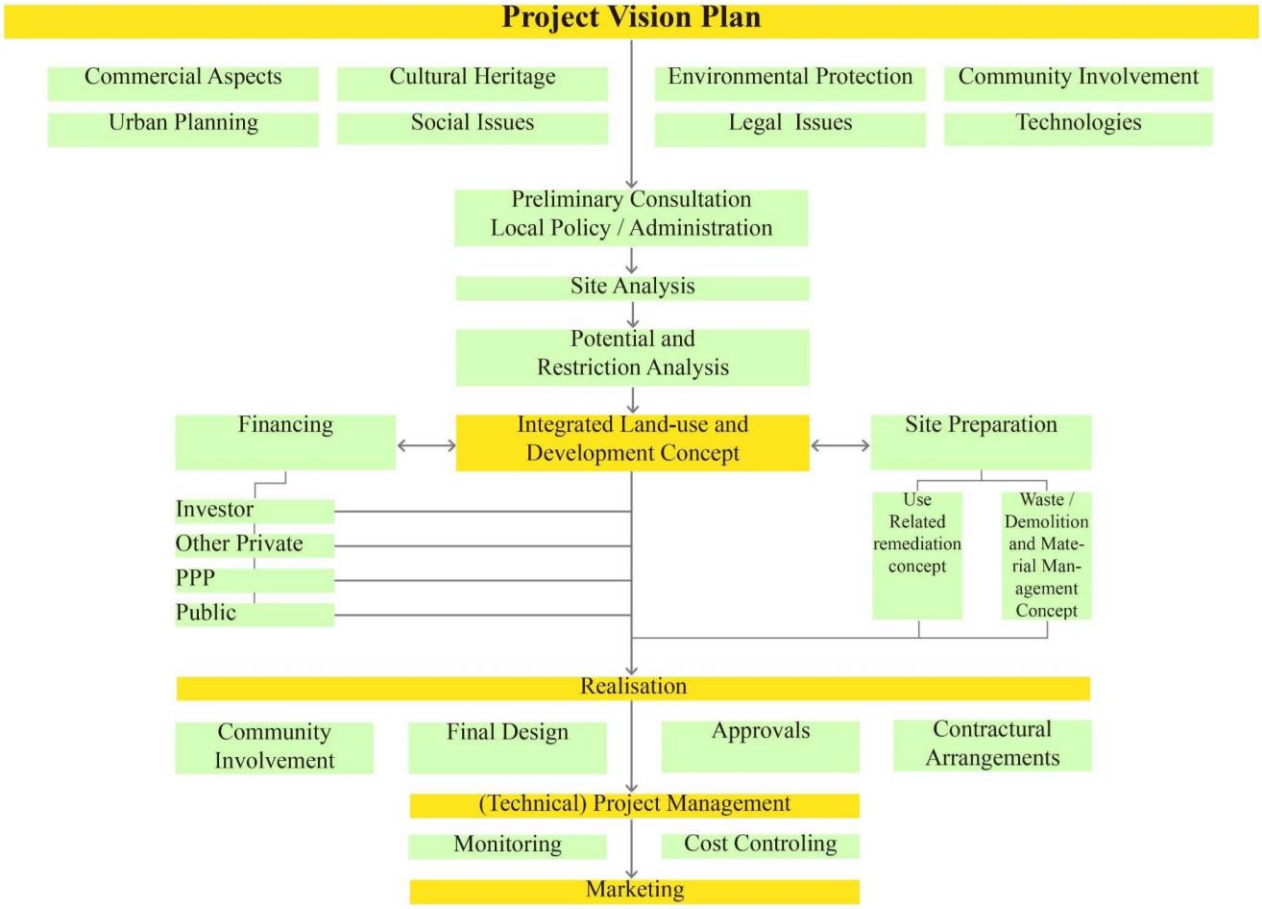

Figure 8 CABERNET Brownfield Regeneration Process in UK (Grimski, Dosch and Klapperich 2012)

can be very site-specific.

One of the biggest barriers to brownfield redevelopment is the threat of liability for contamination (APA 2010). The formal investigation of brownfield contamination consists of a two-part environmental site assessment: Phase I Environmental Site Assessment (ESA) and Phase II ESA. The assessment typically focuses on human health and ecology (EPA 2018). If the ESA Phase I reveals a high probability of contamination, the ESA Phase II will be needed. The second phase can be very expensive—between $10,000 and $100,000, compared to $1,500–$3,000 for Phase I (APA 2010). The top contamination sources in brownfields include metal and organic matter. A list of the top twenty hazardous substances found in brownfields and the common remediation solutions is available in Appendix I. After major contaminants are identified, the redevelopment will move to the remediation and concept design processes.

3. Site Concept

The data collection, site analysis, and contamination assessment generate a list of possibilities for the brownfield site. After these preparations, a site concept should be developed together by professionals and the community. The models analyzed here use different terms to describe this phase: "determine reuse options" (APA 2010); "project structure plan" and "integrated spatial concept" (Sarni 2010); and "integrated land-use and development concept" (Grimski, Dosch and Klapperich 2012). The goal of the site concept is to develop a land use concept that meets the current financial, environmental, and legal needs of the developer and the community, while having a positive social, environmental, and economic impact on the community.

The professionals involved in the project should engage the community in the site concept so as to assess community members' needs (APA 2010), provide design results and ask

for feedback (APA 2010; Sarni 2010), and invite community members to develop the concept with them (APA 2010).

The site concept is a prerequisite for site preparation and implementation. A different proposed site concept—for instance, for a public green space or a residential district—will necessitate a different level of site preparation. Therefore, it is critical to have a clear goal and process for proceeding with the development.

4. Site Preparation

Site preparation is critical for brownfields, as there may be contaminants on the site that are harmful to humans or the environment. Suitable cleanup methods are determined based on the environmental assessment and site concept. In the cleanup phase, community members are frequently involved as volunteers (APA 2010; Hollander, Kirkwood and Gold 2010). The range of possible mitigations is available in Appendix B.

5. Implementation

The next step is the implementation of a redevelopment plan, which typically consists of two separate but interdependent components: the reuse option and the cleanup option. The reuse option will determine the scope and design elements for the site; and determine the cleanup option meanwhile because different land use needs different level of cleanup. The reuse and cleanup options should satisfy both the community's needs and the opportunities and challenges discussed in the preceding steps. If the plan meets the majority of the community's needs and the cleanup option is well suited to the end use for the site, then the plan is ready for implementation.

Several sequential steps are involved in implementation of the redevelopment plan. First, financing for the project must be identified and secured. Then the redevelopment plan must get approval from the local government. After finalizing approval for land use and pending real-

estate transactions, the cleanup and construction steps can be implemented.

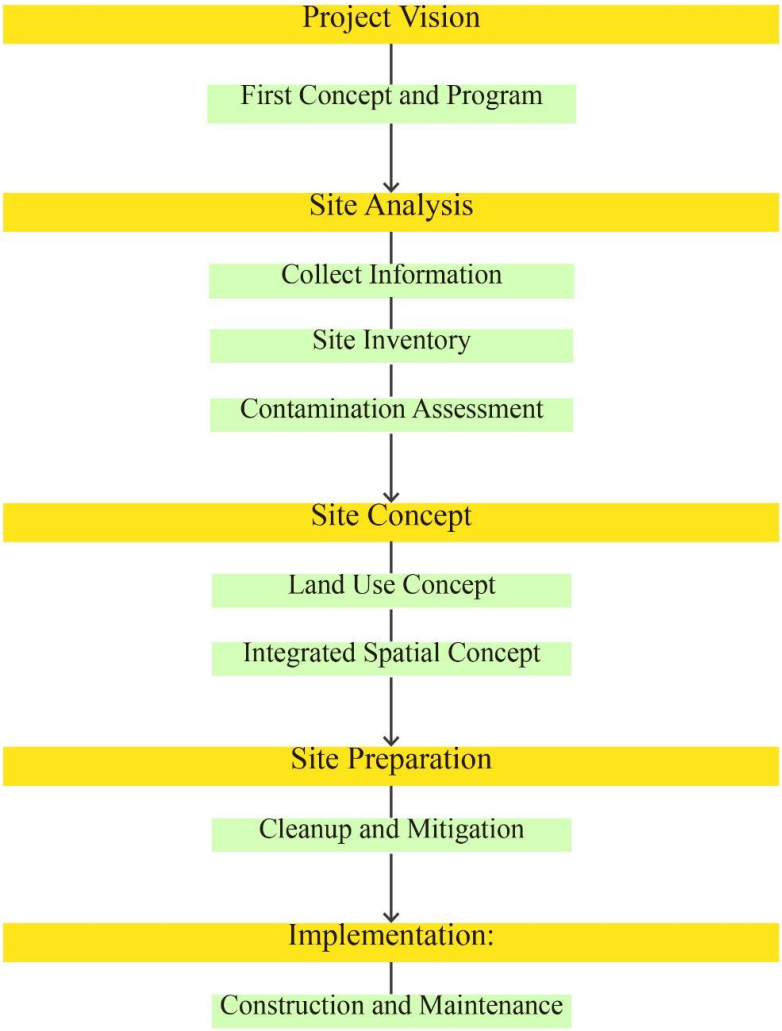

Figure 9. Brownfield Redevelopment Framework (Author 2018)

Sometimes the redevelopment of a brownfield site cannot be fully implemented because of time or budget issues. In these circumstances, a short-term or interim plan can be implemented. Brownfield properties where redevelopment has not completed can be used as outdoor gathering spaces like farmers markets, community gardens, or event or movie spaces. A long-term redevelopment plan can be implemented later when funding and assistance are available. Based on the discussion above, Figure 9. offers a simplified diagram of the brownfield redevelopment framework.

3.1.2 Brownfield Redesign: Participation

According to the APA's research, community participation and community consensus are two of the most important ingredients for a successful brownfield redevelopment project (APA 2010). Research has shown that it is beneficial for brownfield redevelopment decisions to be subject to public comment and responsive to local government revenue needs (Catney, Cianflone and Wernstedt 2012). Although it can be difficult to know whom to include in such a project, involving the appropriate parties from the beginning is a crucial aspect of brownfield redevelopment (Hollander, Kirkwood and Gold 2010).

In the past, most public participation in brownfield redevelopment occurred during the preliminary phase. In 2002 the Brownfields Act clarified that meaningful public participation is necessary in brownfield projects; however, this act only covers document access and prior notice of action for the public (Lowham 2012). Traditional public participation—including public record, notice, comment, and hearings—is already being implemented in brownfield projects, but there is a growing need for new strategies that promote more meaningful participation, where "community groups can be involved in real decision making, not just feedback" (Knapp and Hollander 2012).

According to the brownfield redevelopment process models utilized in this thesis, community participation occurs in various steps in brownfield redevelopment. Table 2 summarizes the participation process for each model based on the brownfield redevelopment process established in the previous section (see Figure 9.). In this table, the "x"s indicate that the models include community participation at that stage.

		EPA Model	APA Model	RESCUE Model	CABERNET Model
Vision	First concept and		X	X	X

	program				
Site Analysis	Collect information		X	X	
	Site inventory		X	X	
	Contamination assessment				
Site Concept	Land use concept		X	X	X
	Integrated spatial concept			X	
Site Preparation	Cleanup and mitigation		X		
Implementation	Construction and maintenance	X	X	X	

Table 2. Community involvement in EPA, APA, RESCUE, and CABERNET Models. (EPA 2006; APA 2010; Sarni 2010; Grimski, Dosch and Klapperich 2012; Author 2018)

Based on Figure 9. and Table 2, I propose a participatory brownfield redevelopment framework (see Figure 10). However, the level and method of participation at each stage in the redevelopment process is still unclear.

3.2 Public Green Space: Function and Participation

3.2.1 Public Green Space: Function

The goal of this section is to summarize the literature on public green space so that it can be used to create the checklist for the case study.

Throughout history, the form and function of public green spaces have been adjusted to meet people's needs and improve their lives. Early research, including Zion's 1963 thesis, indicates that the transition of urban parks from ornamental to necessities of urban life was important (Zion 1969; Marcus and Francis 1997).

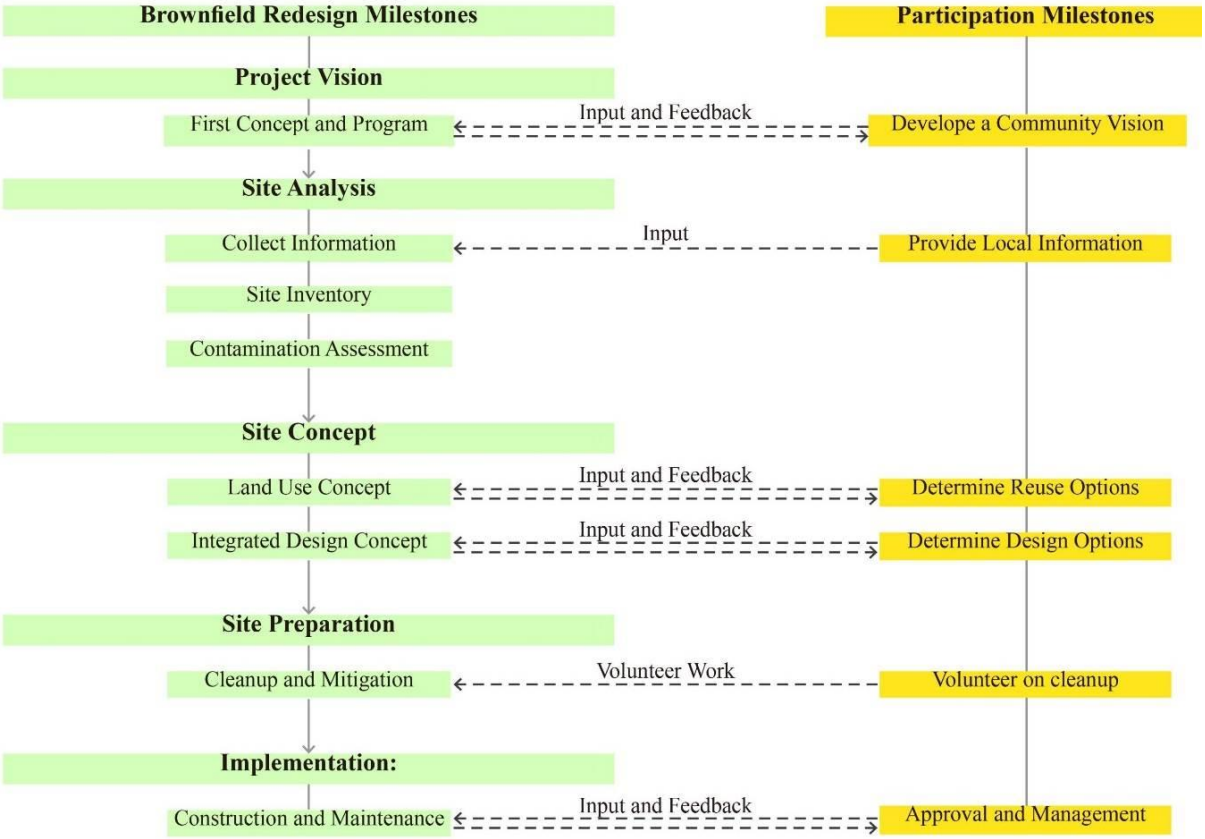

Figure 10 Participatory brownfield redevelopment framework (Author 2018)

Today urban parks are no longer pleasure ground for a specific class, as they were around in 19th century. Urban parks now become more open and sustainable, integrating all potential open space into a network, providing more artistic, participatory sensibility of programming, and more possibilities of being productive, becoming recycling resource and reclaiming derelict lands (Cranz 1997).

Recently, Currie (2017) indicated that well-designed parks are valuable assets to their neighborhoods and address the fundamental needs of those using them. This study also confirmed that even small public parks, despite their limited footprints, can provide much more than their amenities if they are well designed. Rupprecht, Byrne, Ueda, and Lo (2015) likewise found that informal green space has the capacity to improve the urban ecosystem and provide various functions, just like a formal park. Such spaces do require management attention because they are part of the urban public space.

We know that public green spaces play a significant role in people's lives. What aspects of public green spaces meet their needs and benefit the community?

1. Community Needs

Researchers have shown that urban parks meet people's needs in at least three categories: natural connection, physical and recreational activities, and social interaction.

(1) Natural Connection

Like they were originally intended to do, urban parks today serve as places for people to access natural settings. Parks are uniquely situated to provide connections to nature for residents of crowded urban neighborhoods (Chiesura 2004; Walker 2004; Baur and Tynon 2010). Since populations worldwide continue to shift from rural to urban areas (Baur and Tynon 2010; UN 2014), it is more difficult for people to obtain access to nature than ever before (Currie 2017).

(2) Physical and Recreational Activities

Parks also provide places for people to do physical and recreational activities. Hayward (1989) explained that small parks, plazas, botanical gardens, waterfront developments, and sports parks are all created to elicit public enthusiasm. The Trust for Public Land indicated that space for recreation is "so desperately needed." It worked on developing a series of parks during 1994–99, hoping to address this need for outdoor spaces in cities.

(3) Social Interaction

Another essential function of urban parks is the space and opportunity for social interaction that they offer. Urban public parks serve as meeting places for the urban community. Their sociocultural function can be especially important for lower income groups (Mohd Riduan Ngesan et al. 2013).

After World War II, the construction of single-family detached homes skyrocketed in the United States. Although such sprawling developments provided a parklike setting in the form of front yards and backyards (Rome 1998; Baur and Tynon 2010), according to Currie, private yards do not offer the same benefits of social interaction as public spaces. In addition, they are not designed to provide ecological functions or the sustainable landscape necessary for developed areas (Currie 2017).

2. Community Benefits

Not only are public green spaces a necessity of urban life, but they also help urban citizens maintain a healthy lifestyle. Research has shown that well-designed public green space makes cities safer, more beautiful, and healthier, and social bonds closer.

(1) Safety

Criminologists have found that crime frequently drops when open space and recreation opportunities are created (Trust for Public Land 1994).

(2) Aesthetics

Walker (2004) stated that parks and public spaces provide a favorite means for enhancing a neighborhood's aesthetics. Forsyth, Musacchio, and Fitzgerald (2005, 3) named small parks "one of the most underrated but potentially valuable ecological resources in a metropolitan area because there are many of them in each given area."

(3) Health

A white paper published by the Trust for Public Land (2005) identified city parks and open spaces as providing health benefits for the public. Access to parks increases frequency of physical activity or exercise, which improves health. A study of elderly residents of Tokyo found that those living in neighborhoods with walkable green spaces lived longer and reported better functional status than those in less green neighborhoods. Likewise, a study of five hundred older adults in Portland, Oregon, found that greater availability of local facilities and green spaces resulted in higher levels of basic physical activity (National Recreation and Park Association 2010).

Beyond the recreational opportunities offered by parks, a growing body of research shows that contact with the natural world improves physical and psychological health. Chiesura (2004) indicated that urban nature provides important social and psychological benefits that enrich human life. Numerous studies have also demonstrated that access to green views and environments can improve cognitive functioning, impulse control, resilience to stressful life events, and overall mental health. Conversely, studies have reported a link between limited

access to nature and increases in attention deficit hyperactivity disorder (ADHD), clinical depression, stress, and anxiety (National Recreation and Park Association 2010).

Unfortunately, according to Oguz and Cakci (2010), many people in urban areas ignore the importance of a physically active lifestyle and time spent in green spaces to their physical and mental health. In light of this finding, it is essential to design urban parks that encourage people to visit and exercise.

(4) Close Social Bonds

Public parks provide settings where people can experience formal or informal social interactions (Chiesura 2004). Urban park designs can stimulate visitors' desire to communicate about their nature experiences. Indeed, interviews confirmed that visitors build bonds with those in their social network by communicating about their experiences at parks using mobile technology.

In public spaces like parks, people meet in a shared space and form the bonds of community (Currie 2017). As a result, parks can help preserve neighborhoods by giving them a unique identity and creating connections through place attachment that may encourage residents to stay as their income level rises (Brown et al 2003; Scannell and Gifford 2010). Moreover, as New Urbanism and other urban design theories promote, public parks and green spaces can be introduced into preexisting communities to link neighborhoods via a network of green infrastructure that includes trails, squares, or small parks (Currie, 2017). The function of public green space is summarized in Figure 11.

This diagram shows the function of public green space, which addresses the design goals that proposed public green spaces should follow.

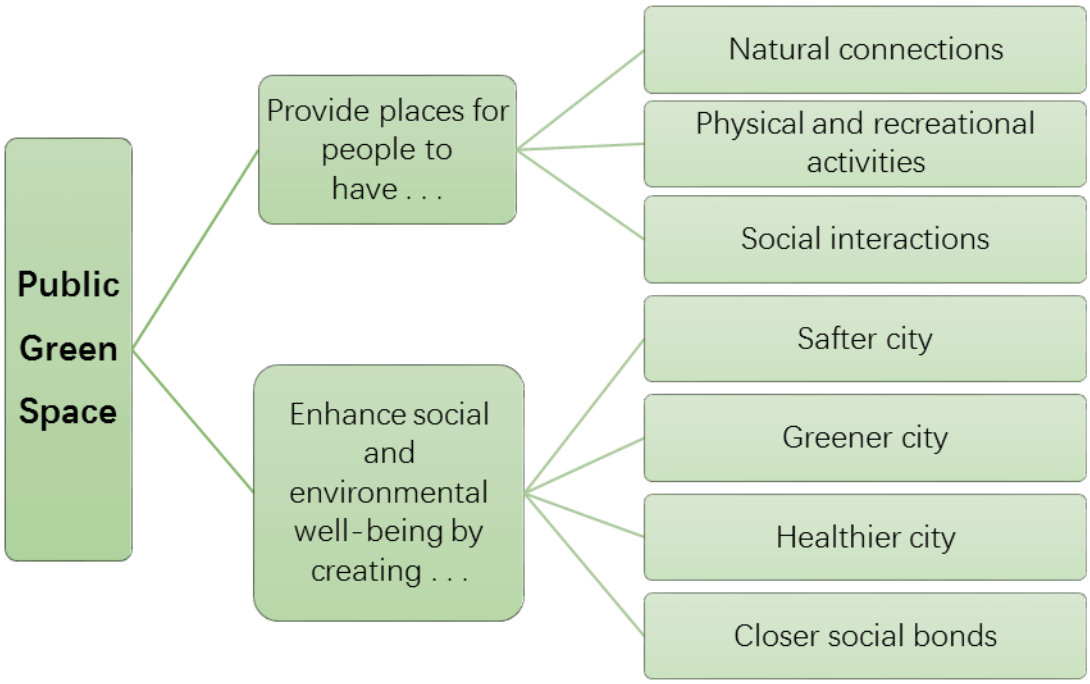

Figure 11. Summary of public green space functions (Author 2018).

3.2.2 Public Green Space: Participation

The American public believes it has the right and ability to decide what property should be acquired for recreational purposes and how it should be designed, financed, and managed (Garvin 2011). Practitioners and researchers have found a way to include community members in the urban decision-making and management process, empowering citizens through their participation in projects for public space, public art, and urban design (Remesar et al. 2012; Dennis and James 2015; Rupprecht et al. 2015). Current participation methods for community design include interviews, workshops, discussion groups, neighborhood community organization forums, stakeholder advisory groups, public forums, community charrettes, group meals, and women- and minority-owned business groups (Abendroth and Bell 2016).

Today more active and improved citizen participation is needed for projects that will improve quality of life in urban areas (Brandao et al. 2015). Gordon and Baldwin-Philippi clarified that project organizers should focus on deepening public participation, rather than

relying on traditional participation methods like hall meetings or information sessions (Gordon and Baldwin-Philippi 2014).

Public green space is created to meet the public's needs. Urbanites live in high-density built environments with limited exposure to natural elements, physical activity, and places for social interaction. Therefore, it is essential to design (or redesign) public parks that are safe and ecologically friendly and that encourage recreational and social activities.

3.3 Community Participation Process and Methods: Use Public Interest Design as the example

This research will use the public interest design process and methodology as the framework to operate community participation. The practice is innovative and diverse; new methods, models, curricula and professional training courses are needed to update this knowledge base (Abendroth, Bell 2016).

The methodology for public interest design is the Social Economic Environmental Design Methodology (SEED). There are 9 steps that guides collaborations of design professionals and stakeholders who best know their community and their needs (Abendroth, Bell 2016). The summary of each step is shown as follows:

1. Engaging Community Participation

   It is critical to operate an inclusive and transparent participation process. The question in the first step is how the community and relevant stakeholders have been involved in the project and setting goals. Examples of participatory input or field research verified by the community include: community charrettes; interviews; public forums; asset-based design and stakeholder advisory groups etc. See Appendix C for a list of participation methods.

2. Identifying Critical Issues

Identifying critical issues, in other word, challenges, offer open dialogue for defining needs that direct the purpose of the design project. These issues can be categorized and defined by societal, economic, and environmental considerations.

3. Defining Goals

Goals address the big picture and what the project should achieve in relation to community needs. It is required to state the goals and processes in advance of initiating a project and allow feedback and communication from all participants.

4. Research and Data Collection

Both quantitative and qualitative research methods are encouraged for data collection.

5. Setting Benchmarks

Benchmarks are reference points or standards that establish performance goals for purposes of evaluation, measurement, or comparison. Design indicators are set during project planning, when the inclusion of community input can provide significant to project development and in meeting goals.

6. Defining Performance Measurement

Performance measurement involves the quantifying of benchmarks built into a project plan. There measures document provide a common language for the communication of strategy.

7. Developing a Timeline

A timeline is essential to provide evidence of anticipated schedule and criteria for project. It is recommended that the timeline and benchmarks be considered together early in a project.

8. Documenting and Reporting Results

It is critical that documented date be accurate, support project goals and processes, and offer analysis of project impacts.

9. Evaluation and Reflection

It is vital to understand what is done well and what challenges remain in the work, as demonstrating accountability and provide evidence of "successful participation".

3.4 Participation in Repurposing Brownfields as Public Green Spaces

Based on the discussion above, I have concluded that, first, public participation is important to brownfield redesign projects because decisions are more beneficial if they are made with public involvement. Further, participation in brownfield projects will provide opportunities for new participation strategies, which will allow community groups to become more involved in the decision-making process.

Second, since public green space is designed for the public, community members have the right to make decisions about land use, site design, construction, and management. Involving the public will give designers a better understanding of users' needs, and sites that are designed to meet users' needs can better serve users, thus becoming good design.

Third, although transformations of brownfields into green spaces have been overlooked in the past, there are many opportunities for these projects, which address sustainability needs for the public. Public participation in both the brownfield transformation and green space design processes is essential. More active participation in these projects is needed in order to improve quality of life for urban residents.

Both the participatory brownfield redevelopment framework (Figure 10) and SEED process will be further discussed after analyzing the case studies. The summary of public green

space function (Figure 11) will be a reference to supplement design development during brownfield to green space design process.

CHAPTER 4

CASE STUDIES

After reviewing the connections between brownfields, green spaces, and participation in the literature in the previous chapter, I will analyze three case studies in this chapter to determine how these elements are implemented in practical projects. The case studies are:

(1) Historic Fourth Ward Park in Atlanta, Georgia;

(2) South Waterfront Redevelopment in Portland, Oregon;

(3) and Lafitte Greenway + Revitalization Corridor in New Orleans, Louisiana.

These case studies provide a better understanding of the implementation of participation methods in the transformation of brownfields to green spaces, demonstrate the role of community participation in the redevelopment process and the benefits of public participation for the community after the completion of a project, and examine effective participation methods that could be used to promote brownfield transformations, as well as the challenges specific to these projects.

All of the case studies were originally brownfield sites that contained contaminants that are harmful to the environment and public health. Although the scope of the projects varied, they all involved the community, and their organizers tried to create a blueprint that incorporated community desires.

To compare and contrast the projects, I created an information checklist (see Table 3). This structure acts as a guide that can be used to collect basic information about the case studies and analyze what will be helpful for my research.

Project Background (Brownfield)	**Design Features and Strategies (Green Space)**	**Participation-Related Information**
Location Site scale Former use Current use Major contaminants Cleanup/remediation method Total cost Project mission/development plan Client Prime design team Timeline	Design considerations (include but are not limit to): Layout/spatial organization Connectivity/transportation Facilities Landscape/planting Design program (facilities and amenities) Environmental and economic impacts	Community support Planning process Participation Methods identified

Table 3. Case study information checklist.

Source: Author 2017; Hollander et al. 2010; Robel 2016; Abendroth and Bell 2016.

For a general overview, I also created a summary chart of the cases (see Table 4).

Project Name	**Historic Fourth Ward Park**	**South Waterfront Redevelopment**	**Lafitte Greenway + Revitalization Corridor**
Location	Atlanta, GA	Portland, OR	New Orleans, LA
Opening date	2011	2015	2015
Site scale	17 acres	1.2 miles (linear)	3.1 miles (linear)
Current use	Public park	Waterfront park	Multimodal

			transportation corridor
Former use	Warehouse and parking lots	Steel and metal fabricating, construction, electrical products manufacturing facilities, and commercial facilities	Shipping canal and railroad Right-of-way
Major contamination	Sewage overflows	Soil and groundwater contamination	Soil contamination
Cleanup method	Storm water detention pond	Soil removal and river restoration	Topsoil remediation
Total cost	$50 million	$10.5 million (primary)	$9.1 million
Project mission	Revitalize existing area by constructing storm water facility in the new park	Enliven the district by restoring the river and providing connections between people and nature	Provide sufficient recreation programming and unite the divided community
Client	City of Atlanta	City of Portland	City of New Orleans
Prime design team	HDR	Walker-Macy Landscape Architects and Thomas Balsley Associates	Design Workshop
Significant facilities	Storm water pond, playground, skate park, walkways, passive lawns, and athletic field	Multiuse trail corridor, public open space, and bridge structures	Greenway trail, orchards, fields, rain gardens, and event and recreational spaces

Environmental and economic impact	Solve the flooding issue; revitalize the surrounding commercial area	Restore the riverbank by enhancing flood storage and protection, bank stabilization, and safe public access to water; enliven the area by creating a diverse set of gathering places	Manage storm water with rain gardens

Table 4. Case study summaries.

After reviewing the background information for each case study, I will evaluate the cases by asking three questions:

1. What was the participation process for each case, and how did it influence the design based on the participation framework established in the previous chapter?
2. What was the participation level for each case, and how did it work based on Sherry R. Arnstein's "A Ladder of Citizen Participation" (see Figure 4)?
3. What recommendations for public participation in the transformation of brownfields into green spaces can be made based on the three cases?

4.1 Case Study 1: Historic Fourth Ward Park, Atlanta, Georgia

4.1.1 Project Background

1. Location: The park is located one block south of Ponce City Market (the former City Hall East) and is bordered by Morgan Street on the north, Rankin Street on the south, Edith Street on the east, and Garden Park Drive on the west. Located near downtown Atlanta and adjacent to the Atlanta BeltLine, the park is well positioned to serve neighborhood residents and

visitors from around the city and the region.

2. Site scale: 17 acres
3. Former use: The site formerly contained abandoned warehouses and parking lots. Situated in a lowland area, the site featured a drainage basin for sewer overflow, a patchwork of weed-filled fields, and cracked asphalt.
4. Current use: Today the site is a public park with a sustainable storm water detention pond and recreational facilities.

Figure 12. The site of Historic Fourth Ward Park regularly flooded prior to development (left) but now contains a storm water detention pond (right).

Source: Atlanta BeltLine 2014.

5. Major contamination: Sewage overflow
6. Cleanup/remediation method: Storm water detention pond
7. Total cost: About $50 million (Atlanta BeltLine 2017)
8. Project mission/development plan: This project included the revitalization of an existing commercial area through the construction of a storm water detention pond in the setting of a passive park with walking paths, an amphitheater, water features, and landscaping. The park is also a gateway into the neighborhood from the BeltLine and will help to promote the Old

Fourth Ward as a sustainable community. Phase I featured the construction of the storm water retention pond and amphitheater, and Phase II the completion of the twelve surrounding acres of landscaped walkways, bridges, observation points, walls, splashpad, and playground.

Figure 13. Watercolor vision of the retention pond by HDR.

Source: Historic Fourth Ward Park Conservancy 2017

9. Client: Atlanta BeltLine Inc. and the City of Atlanta
10. Prime design team: HDR, Inc., Atlanta; Wood + Partners, Inc., Tallahassee, FL; Richard Wittschiebe Hand, Atlanta; URS, Inc., Atlanta; Pillar Design, Tempe, AZ; Womack Lumsden & Associates Consulting Engineers, Atlanta; and Willmer Engineering, Atlanta
11. Timeline: In 2003, the concept plan for the project was developed. The next year, the Trust for Public Land began to secure crucial parcels to form the greenspace, and the Park Area Coalition was formed by neighborhood residents and business owners. In 2008, ground was broken for the park, with funding support from the Atlanta BeltLine Partnership Captial

Campaign, the Department of Watershed Management, Park Improvement Bonds, and the Atlanta BeltLine Tax Allocation District. More land was donated by Wells Fargo, Georgia Power, and BB&T. The Park Area Coalition evolved into the Historic Fourth Ward Park Conservancy, serving as the nonprofit support for the park. The coalition's mission includes developing, enhancing, and maintaining the park. In 2009, construction began on the park, and in 2011, the park officially opened. In 2012, Phase II of the park opened.

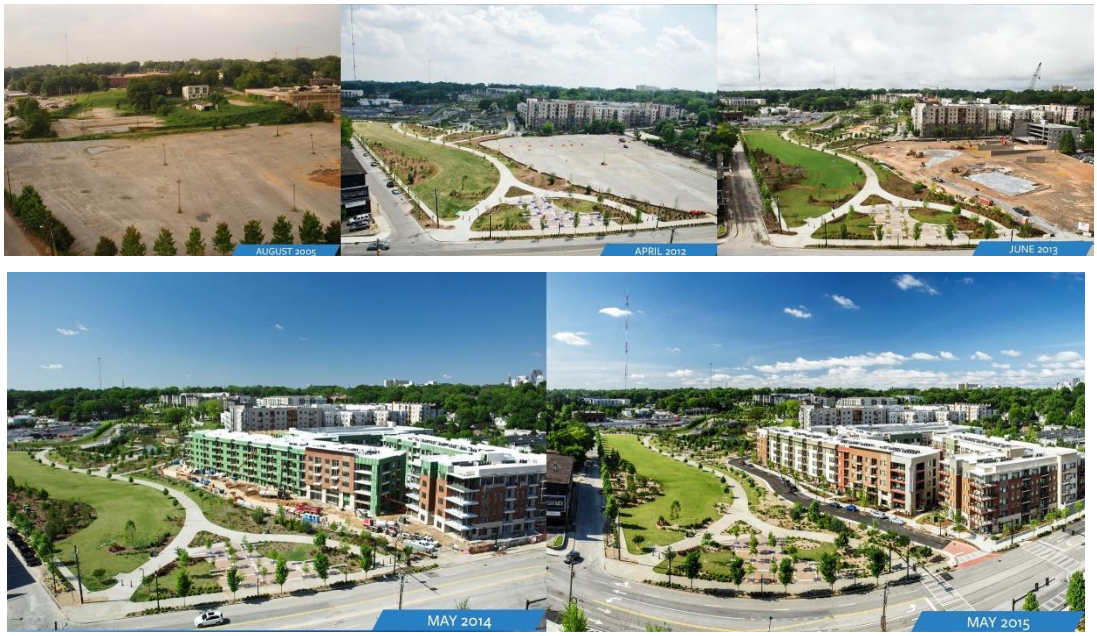

Figure 14. Aerial photograph of Fourth Ward Park.

Source: Historic Fourth Ward Park Conservancy 2017

4.1.2 Design Features and Strategies

The brownfield areas of Fourth Ward Park were transformed from barren, contaminated sites into a vision for sustainable redevelopment. The park attracts a diverse group of trail users and park goers since it connects with the eastside trail of the Atlanta BeltLine. Thus, Fourth Ward Park has elements designed to appeal to dog walkers, runners, families with children, teens, skaters, and those looking for a green respite in the middle of the city. The main section of the park includes a storm water pond, a playground, a skate park, flowing walkways, open and

passive lawns, wildflower meadows, and athletic fields (see Figure 15 and Figure 16).

The two-acre storm water detention pond has dramatically reduced flooding in nearby neighborhoods. The pond infiltrate a minimum of 425 gallons of water per minute due to its elevation below the site's water table, and this water is used to water the park's lawns and playing fields (American Society of Civil Engineers 2017).

The major environmental challenge for the site was flooding, caused by the considerable grade change across the site (EDAW, Inc., Arcadis & APD 2009). Part of the site began to flood when the Sears warehouse was constructed there in 1926, and the flooding worsened after Sears vacated the warehouse in 1989 (Trust for Public Land 2016). The proposed solution to address this flooding was not to filter or clean the water, but rather to detain it. The park project includes a two-acre lake, a detention basin that provides storm water overflow relief for the combined sewer system in the Historic Fourth Ward area.

Other environmental challenges of the project include the remediation of contaminants from a leaking underground (petroleum) storage tank system and the removal of debris, including material containing asbestos, from an abandoned construction and demolition landfill within the area designed for storm water detention (Corporate Environmental Risk Management 2017).

Maintenance is also a challenge, both economically and socially. According to Esther Stokes, chair of the maintenance committee of the Historic Fourth Ward Park Conservancy, the park department is underfunded; this is why the Conservancy partners with it. In order to keep the park operating normally, the Conservancy is responsible for fundraising and maintenance. The maintenance mainly depends on volunteer work by community members, which is

Figure 15 Design Strategy: Connection (Author 2018)

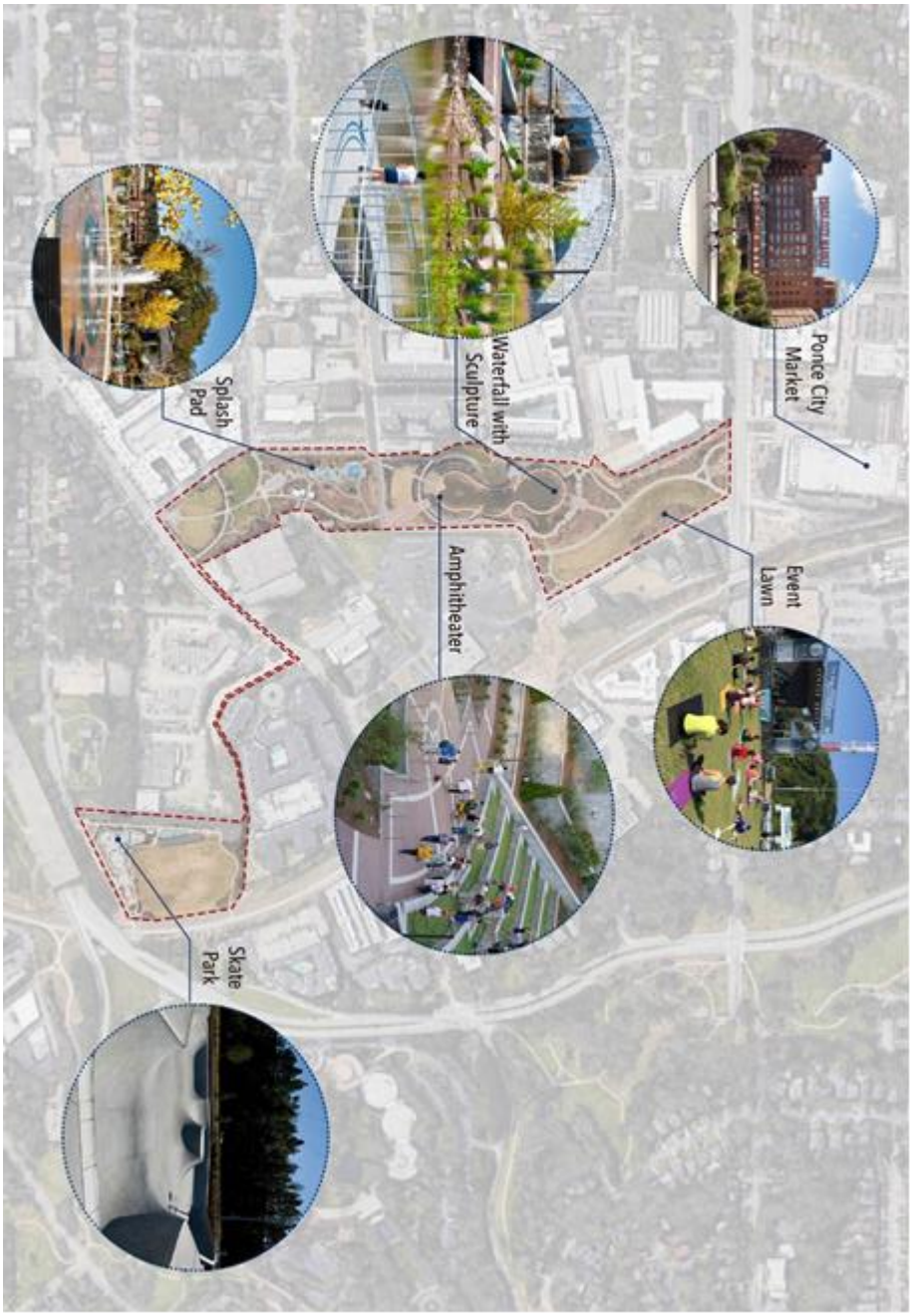

Figure 16 Design Strategy: Program (Author 2018)

challenging because the neighborhood has historically been divided by racial, economic, and physical barriers (Urban Land Institute 2013).

Although there are plenty of park facilities in the area surrounding the BeltLine, when Historic Fourth Ward Park was created, there was a need for more attractive, comfortable, and versatile accommodations and outdoor activities. Therefore, the park was designed to offer community members not only recreational areas, but also valuable and desirable community spaces.

According to a study of the Historic Fourth Ward conducted in 2008, the park site is difficult to access, as the streets around it are narrow and poorly maintained.

Now the park is connected to and supported by the Atlanta BeltLine. The park's connection to the Eastside Trail encourages visitors from outside the neighborhood to use the park. The park also receives support from the BeltLine when planning for new amenities (Old Fourth Ward Master Plan 2008). For current residents, the park offers additional recreational opportunities, better visual interest, and a gateway into the BeltLine. It also increases the satisfaction of local residents and the value of surrounding properties.

4.1.3 Participation Review

1. Who is the community?

The community participation processes for this project involved three groups of people: study group members, steering committee members and Atlanta BeltLine Inc. (ABI) representatives.

As part of the Atlanta Beltline development, the park has a community engagement framework (CEF) to follow. Five study groups have been designed to invites the general public to learn about the development and responds to inquires. These study group areas have been

further subdivided into ten sub-areas. Each sub-area has a Master Planning Steering Committee with area representatives (See Appendix D). The study group focused on topics in specific regions, enabling community members' direct input into the planning, design, and implementation of this project (Atlanta BeltLine 2017). The Historic Fourth Ward Park is in Northeast study group area and planning subarea 5 (See Figure 17).

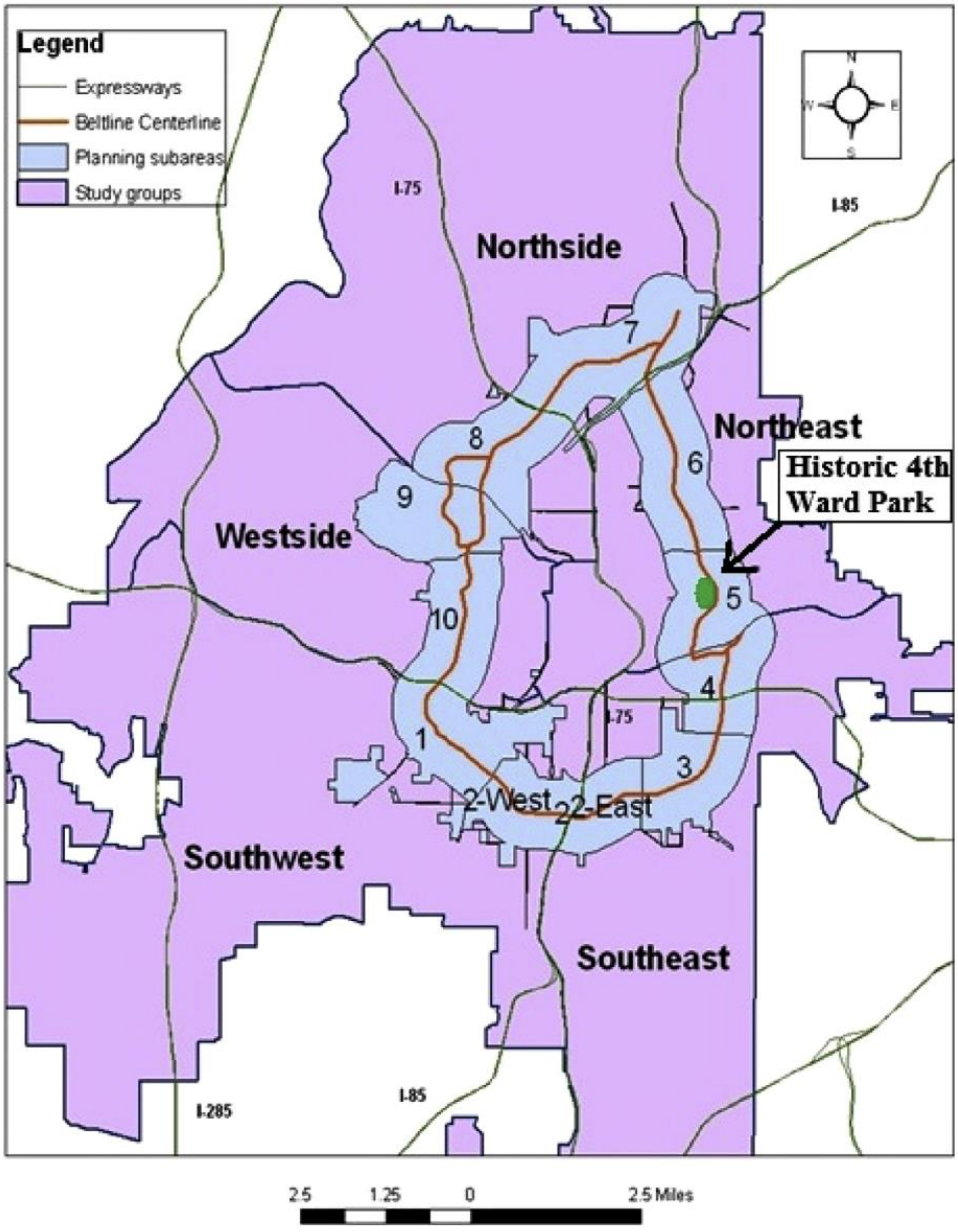

Figure 17 Community Engagement Framework Map (Roy 2015)

There were several meetings intended to get the community involved in the project (see Table 5).

Time	Topic	Present			
		ABI Representatives	Steering Committee	**Study Groups**	Friends of H4WP
Mar. 2006	Initial Concept Development				X
Aug. 2007	Study Group Meeting	X	X	**X**	
Sept. 2007	Sub-area 5 Steering Committee meeting	X	X		
Sept. 2007	Goals and objectives determined	X	X	**X**	
Oct. 2007	Review 3 Master Plan concepts for H4W park	X	X		
Oct. 2007	Review Master Plan concept for the whole study area	X	X		
Nov. 2007	Presentation of H4W Park Draft Plan		X		
Dec. 2007	Presentation of H4W Park Master Plan	X	X	**X**	

Table 5. Schedule of Historic Fourth Ward Park meetings (Roy 2015)

2. What is the participation process?

During the planning and design process for the Historic Fourth Ward Park, three main meetings to encourage community involvement took place: the initial community-driven design meeting in March 2006 (See Table 6), the concept park master plan steering committee meeting in October 2007, and the draft park master plan steering committee meeting in November 2007 (see Table 7). The participation process and framework are shown in Figures 18.

Water	**Facilities**	**Functional Spaces**
Interesting water feature Soft lake edge	Trails Dog park Outdoor theater Public restrooms Concession stands Library	Lawn space Picnic area Active recreation area Community interaction space Event space Flexible outdoor event space

Table 6 Initial proposed park program elements (Source: Atlanta BeltLine 2009)

Meeting Dates	Topic	Present	No. of participants
July 18, 2007	Sub-area 5 master plan Steering Committee kick-off	ABI Representatives, Steering Committee members	?
Aug 22, 2007	Study Group meeting	ABI Representatives, Steering Committee members, **Study Group members**	53
Sept 10, 2007	Sub-area 5 Steering Committee meeting	ABI Representatives, Steering Committee members	12
Sept 26, 2007	Goals and objectives determined	ABI Representatives, Steering Committee members, **Study Group members**	19
Oct 23, 2007	Review three Master Plan concepts for H4W park	ABI Representatives, Steering Committee members	14
Oct 29, 2007	Review Master Plan concept for the whole study area	ABI Representatives, Steering Committee members	?
Dec 20, 2007	Presentation of H4W Park Master Plan	ABI Representatives, Steering Committee members, **Study Group members**	32
April 21, 2008	Presentation of the draft of the Sub-area 5 Master Plan	ABI Representatives, Steering Committee members	9
May 8, 2008	Presentation of the final Sub-area 5 Master Plan	ABI Representatives, Steering Committee members, **Study Group members**	26
Nov, 2008	Discussion on Final Master Plan	ABI Representatives, Steering Committee members	11

Table 7. Schedule of Historic Fourth Ward Park and area master plan meetings. Incomplete information is signified by a question mark. (Roy 2015)

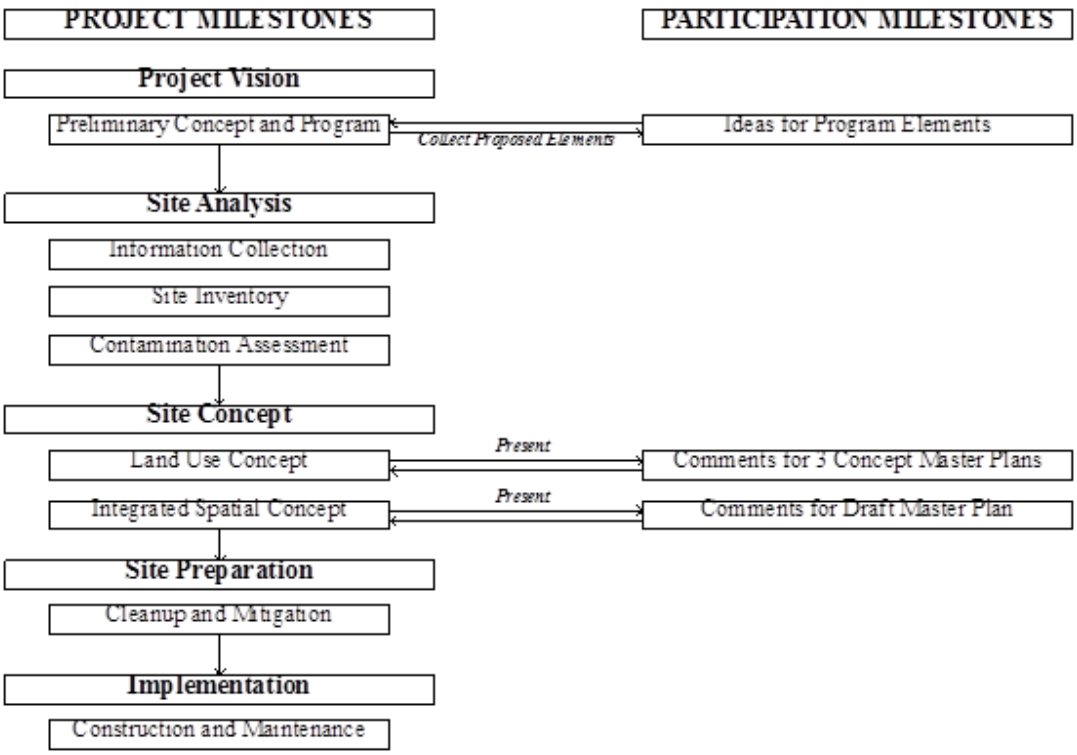

Figure 18 Participation Process (Source: Atlanta BeltLine 2009; Author 2018.)

At the first meeting, the community took part in developing park program elements and proposing park design considerations. Then the design team created a concept master plan with design programs and placed the programs on the site map. Three alternative concept plans were presented in the second meeting for community comment. The design team incorporated the community's comments into a draft master plan for the third meeting. After the meeting participants commented on this draft, the final design was completed (Atlanta BeltLine 2009).

3. What is the community's role in the participation process?

In this project, the major role of community members was to give organizers their opinions about the proposed park program elements and design concerns during the first stage of the process. They also made comments about the concept master plans and draft master plan.

4. What are the significant participation methods in this project?

In this project, the participation methods used were community planning meetings, public forums, steering committee and study groups.

5. Evaluation of Participatory Process

Although the park's master plan took "into account the priorities and concerns of the many stakeholders involved, including the neighborhood, [and] adjacent developments, both existing and proposed" (Atlanta BeltLine 2009), the effectiveness of public participation in the project is unknown. The subarea 5 study group, the direct participation method for local residents, only participated in a few meetings about the park, including the study group meeting, the goals and objectives meeting, and the presentation of the master plan. It was the steering committee that made most of the decisions during the engagement process. The steering committee members were recruited by the ABI, meaning that the ABI remained in control of the planning process by controlling the selection process (Roy 2015).

Through public meetings, public forums, and the study group, community members only had the opportunity to make comments about the process. What is more, there are only two steering committee members identified as "local residents", other members are planners, designers or community organization members etc. No evidence shows that the community had the right to make any direct decisions. Therefore, the public participation level for Historic Fourth Ward Park stays within the "degrees of tokenism", and the level of "consultation" and "placation".

4.2 Case Study 2: South Waterfront Greenway, Portland, Oregon

4.2.1 Project Background

1. Location: Situated within the North Macadam Urban Renewal Area, the South Waterfront District is located south of downtown Portland, Oregon, on 140 acres of former industrial land. The Willamette River forms a natural boundary on the east side of the district and offers 1.2 miles of direct waterfront access. Marquam Bridge and the I-5 freeway serve as the northern and western boundaries of the district, while Hamilton Street forms its southern edge (see Figure 20).
2. Site scope: The 4.35-acre site is approximately 1,300 feet long and varies in width between 130 feet to 170 feet.
3. Former use: The site formerly held commercial/industrial facilities, including steel and metal fabricating, road construction, general construction, and electrical products manufacturing (Hart Crowser, Inc. 2012).
4. Current use: The park is dedicated to the restoration of the waterfront as a naturalized river edge and riparian habitat. There is a quarter-mile section of biking/walking path along the Willamette River. The dense, mixed-use development planned along the park's

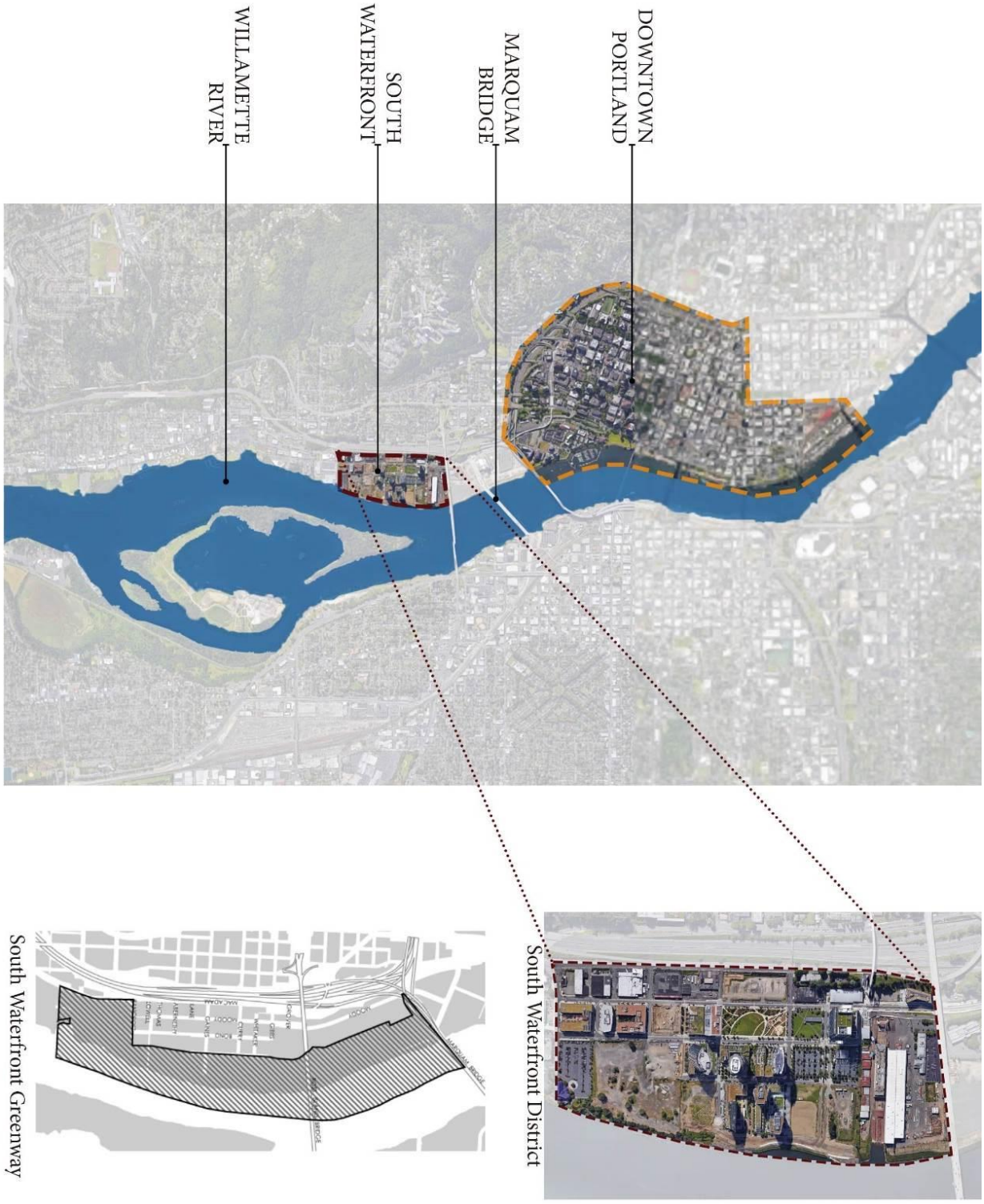

Figure 19 Project Context (Author 2018)

edge, as well as pedestrian and bike trails, set the need for access to the park at odds against the park's environmental goals (SWA/ Balsley 2017).

5. Major contamination: Total petroleum hydrocarbons (TPH), Polychlorinated biphenyl (PCBs), Polycyclic aromatic hydrocarbons (PAHs) and metals (lead, arsenic, barium, cadmium, chromium, copper, lead, mercury, nickel, selenium, and zinc) (Oregon Department of Environmental Quality 2018)
6. Cleanup/remediation method: The Portland Development Commission (PDC) utilized funding through an Environmental Protection Agency (EPA) Brownfields Assessment Project grant to complete a Phase I area-wide assessment between 2003 and 2004. Most of the properties in the northern reaches of the district required Phase II assessment and remediation. The redevelopment therefore addressed cleanup and remediation requirements on a site-by-site basis. For the greenway development, the plan involved removing soil and restoring the shoreline habitat (De Sousa 2013).
7. Total cost: $10.8 million for Phase I and $4.7 million for Phase II
8. Project mission/goal: The mission of this project was to ensure a clean and healthy river for fish, wildlife, and people; enhance the livability of the area; enable a harmonious relationship between people and the natural functions of the river; restore the river's fish and wildlife habitats; enliven and beautify the district; and provide sustaining quality, beauty, and safety.
9. Client: City of Portland
10. Prime Design Team: Walker-Macy Landscape Architects and Thomas Balsley Associates
11. Timeline: In 1999, the North Macadam District Framework Plan was developed by the Portland Development Commission. Three years later, the South Waterfront Plan was refined

and updated from the 1999 version. The South Waterfront Code and Guidelines were also adopted. In 2004 the Waterfront Greenway Development Plan was accepted by the City Council. In 2006, $4 million in urban renewal funds (generated through tax increment financing) and $2 million in park system development charges (SDCs) were committed to the project. The next year, the project entered the formal design phase. A design team (Walker-Macy Landscape Architects and Thomas Balsley Associates) was selected for the project, and work commenced on the design. A project advisory committee (PAC) was created to guide the final design of the Central District Greenway construction. In 2008, an agreement on enhanced bank restoration was negotiated due to the contamination to the river and site. The design was modified in 2009 based on direction from the National Marine Fisheries Service for Federal Permit Approval. In 2010, an updated design for the site—with a shallow water fish habitat, bank stabilization, plant riparian vegetation, and wildlife habitats—was shared with community members at a public meeting. The next year, project organizers worked through the details of the construction documents and adopted the Greenway Design Guidelines (Portland Parks & Recreation 2011, 2012). The construction was completed in December 2014 (Portland Parks & Recreation 2018).

4.2.2 Design Features and Strategies

At the direction of the US Army Corps of Engineers, Oregon's Division of State Lands (DSL), and the National Marine Fisheries Service (NMFS), the design for the riverbank restoration included the creation of a habitat in the form of a shallow water bench to provide shelter for juvenile fish and adjacent riparian plantings. Working jointly with the Corps of Engineers, DSL, NMFS, Oregon Department of Environmental Quality, and Portland's Bureau of Environmental Services, a hybrid concept was developed in summer 2010 that met public and

agency needs (City of Portland 2018).

The greenway is a linear park and trail corridor positioned at the eastern end of the South Waterfront District. Design strategies addressed the periodic adjacency of the park to streets and accessways, the park's public open spaces, and its existing and proposed bridge structures. The integration of the greenway with these elements added vitality, enhanced public safety, and instilled in the community the sense that the greenway is a public amenity intended to be shared by all.

The greenway serves both as a corridor for the South Waterfront District and as an important link in a regional trail system. In order to complete the district's transportation system and connect the district to the city, the design guidelines for connectivity at the site focused on ensuring that the pedestrian and bicycle connections to the greenway trail from adjacent accessways or urban spaces were safe, convenient, and direct. In addition, the guidelines highlighted the need to align the greenway with the trail to take advantage of the site's opportunities to enhance the diversity of trail experiences; create a continuous greenway trail system with consistent design elements that celebrate the area's history and character; and develop clear and simple signage for shared use, basic rules, wayfinding, and interpretive displays.

The greenway increased the habitat and enriched the ecological diversity of the Willamette River, attracting diverse wildlife. Native plants were selected for use on the greenway, and habitats were created for a structurally diverse and ecologically valuable greenway. Enhancements to the area were focused on flood storage and protection, bank stabilization, safe public access to the water, and the aesthetic qualities of the site, while still protecting the area's natural resources and public and private property.

The greenway includes a diverse set of gathering places suited to a range of visitors seeking visual and physical access to the Willamette River and its shoreline. Places to sit, interpretive kiosks, and integrated water features are examples of facilities that enhance the greenway's gathering places (see the design strategies in Figure 20).

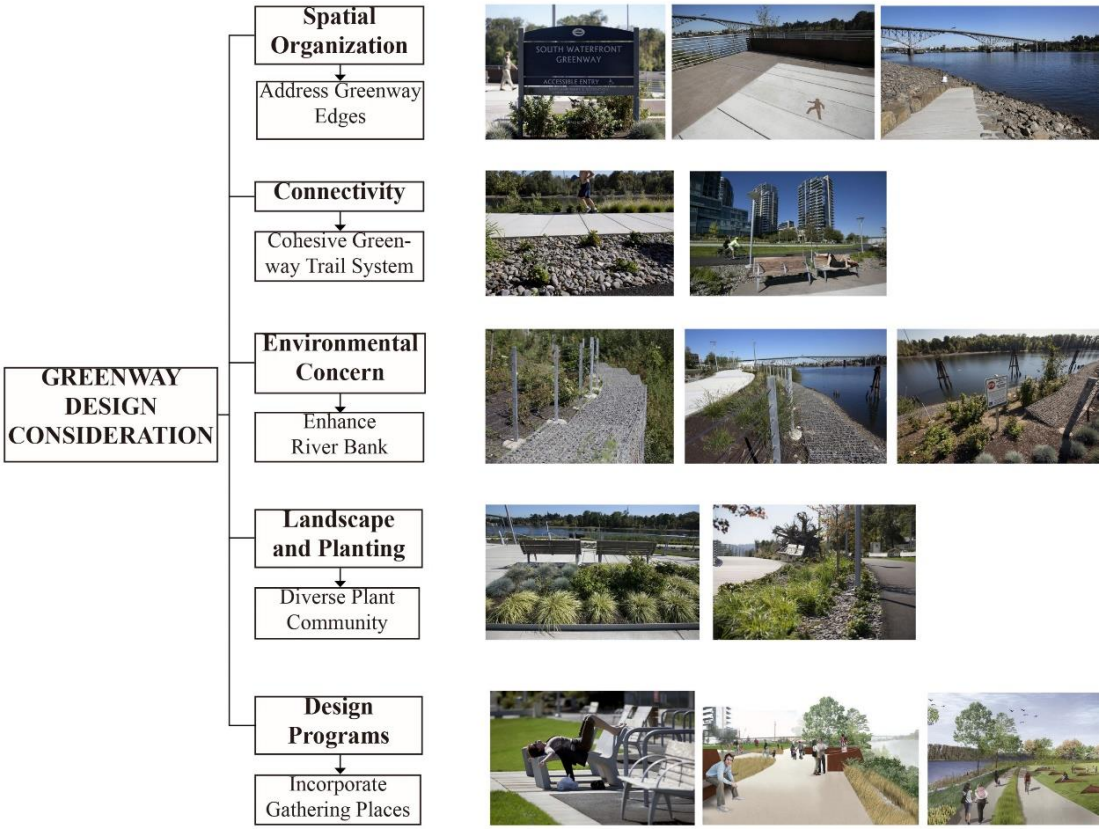

Figure 20 Design Strategies (Author 2018)

The key challenge for the South Waterfront Greenway project was achieving consensus on an affordable and publicly supported design. Designing, permitting, and building facilities with access to the river was far more complicated and expensive than expected. Moreover, the greenway's purpose was always to balance the need for recreational opportunities with the need to protect and improve habitats. Achieving this balance also proved to be challenging and costly (Portland Parks & Recreation 2012). The high cost of the bank and habitat work meant that not

all of the proposed elements from the development plan could be implemented (Portland Parks & Recreation 2011; 2012).

Another challenge was contamination. According to De Sousa (2012), residents were concerned about the development because it was located on a brownfield site. Redevelopment of brownfields requires cleanup and remediation. Therefore, it was essential to let the community know about the results of the remediation/removal to ensure they understood the project.

The greenway is proposed to provide connections from the waterfront in southern Portland to downtown Portland. It also provides greenway users with access to the waterfront and connect the renewal area to surrounding neighborhoods (De Sousa 2014; Portland Parks & Recreation 2017) (see Figures 21 and 22).

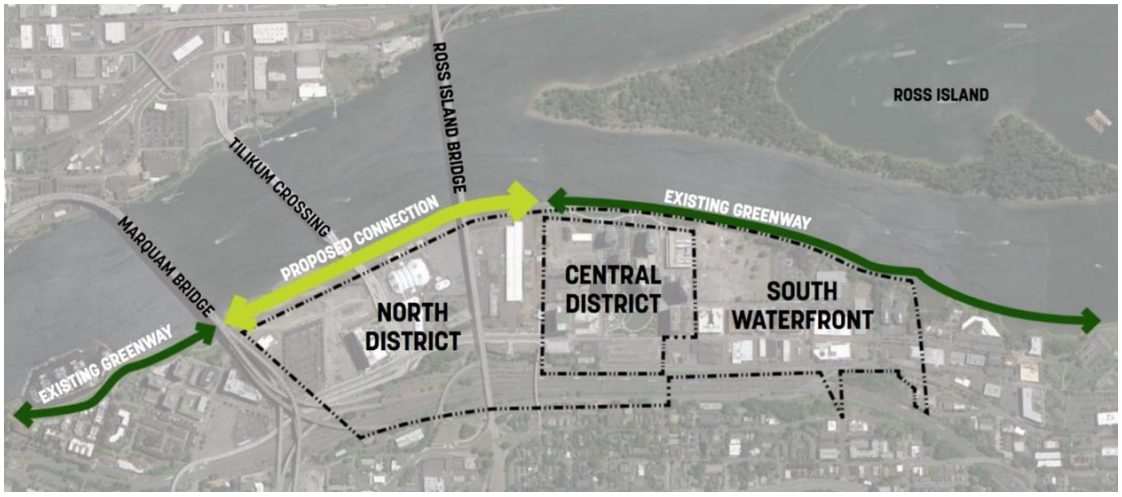

Figure 21. Portland South Waterfront Greenway context connection. (Source: Portland Parks & Recreation 2017)

The completed greenway trail connects to a network of open spaces, including parks, social gathering spaces, natural spaces, small gardens, and linear connections to the waterfront. This provides social and athletic opportunities to both residents of the surrounding neighborhoods and visitors from outside the area.

Regional planning directives currently limit green space development through an urban growth boundary, thereby encouraging Portland to be creative as it nears build out. The renewal of the South Waterfront District represented one of the last large-scale opportunities to achieve Portland's economic and land use growth objectives (De Sousa 2012).

Figure 22. Portland South Waterfront Greenway trail connection. (Source: Portland Parks & Recreation 2017)

4.2.3 Participation Review

1. Who is the community?

The stakeholders identified by Portland Parks & Recreation include Portland Parks & Recreation, the Portland Development Commission, the Bureau of Environmental Services, the Office of Healthy Working Rivers, the Bureau of Planning & Sustainability Development Services, property owners, neighbors, project advisory groups, and other agencies (Portland Parks & Recreation 2011). For the purpose of this thesis, the following groups or organizations are the community: property owners, neighbors, project advisory groups, and other potential

greenway users. A collaborative partnership among citizens, neighbors, businesses, community organizations (advocacy groups), property owners, city bureaus (the Bureau of Environmental Services and Bureau of Planning & Sustainability Development Services), and government organizations (Portland Parks & Recreation, the Portland Development Commission, and the Office of Health Working Rivers) also took part in the greenway development process.

The Greenway Development Plan in 2004 included an expansive and inclusive public involvement program, which was directed at specific design alternatives (Portland Development Commission 2004). Public open house meetings were organized by Portland Parks & Recreation, the project advisory team, and the Portland Development Commission. The design professionals provided all presentation materials, presented information verbally as needed, and engaged in discussions and interacted creatively with the public. They also mailed a series of project newsletters and briefs to several neighborhood associations. The city's staff and consultant team responded to all survey and discussion conclusions, modifying the project direction accordingly. The project organizers held three public open houses and five public "stop and talks" to share the project information with the public. These events focused on building an understanding and general consensus for the direction of the plan

2. What is the participation process?

Based on the data collected, I created a participation framework for the South Waterfront Greenway (see Figure 23)

Several participation activities were used to engage the public. In the 2004 South Waterfront Greenway Development Plan, the public involvement on the greenway and South Waterfront District plan was "extensive" (Portland Parks & Recreation Bureau 2004). Three public open houses and five public "stop and talks" were held to present the project information

to the public. Every open house focused on a particular topic: the first looked at the existing conditions of the site and alternative concepts, the second focused on the concept design plan and concept design alternatives for the Central District, and the third showcased the schematic design plan and schematic design alternatives. All of the open houses included a review of previous works, a presentation, a survey of preferences, newsletters, and a slideshow. A boat tour was also provided as part of the first open house to give attendees a better sense of the area. The numbers of the attendants are shown in Table 7.

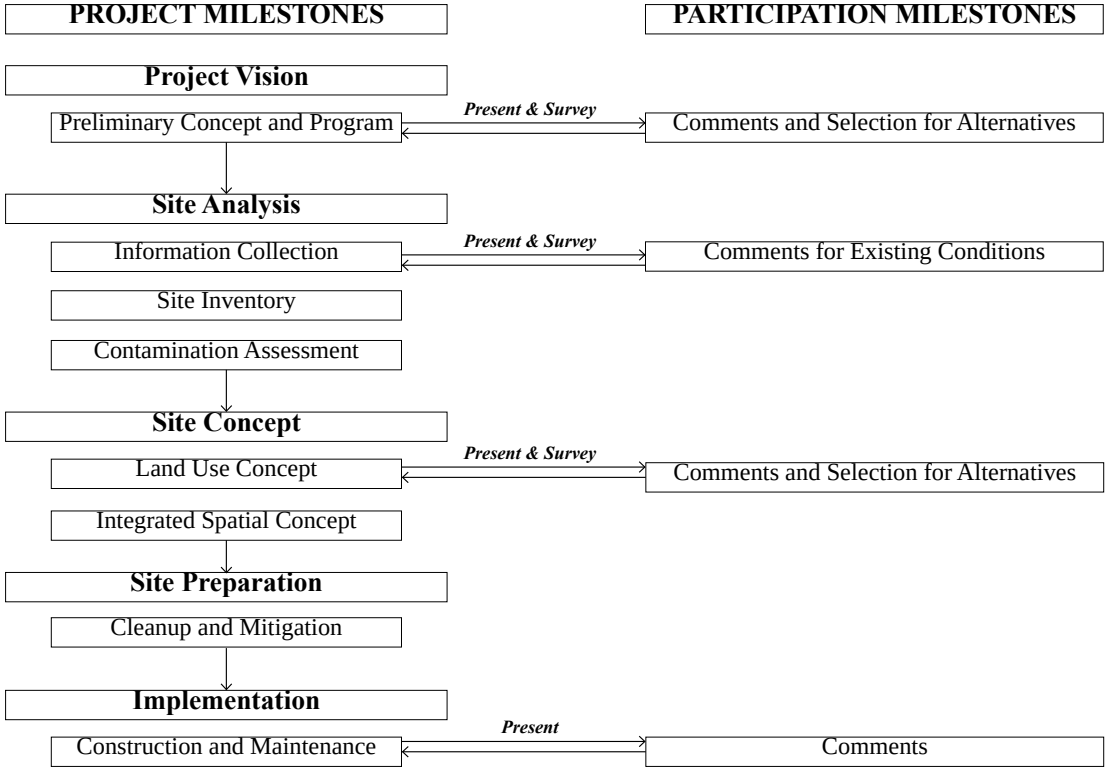

Figure 23 South Waterfront Greenway Participation Framework (Author 2018)

Meeting	Attendance
Property owners meetings	12 with at least 10 people
Stop and talks	5 with at least 150 people
Open House 1 (OMSI)	1 with at least 80 people
History slideshow	2 with at least 75 people

Aerial tramway (TRAM) design/related project	1 with at least 300 people
Project advisory team	1 with at least 20 people
City Corps	1 with at least 12 people
Open House 2	1 with at least 60 people
Open House 3	1 with at least 35 people
AIA & ASLA	1 with at least 25 people
Design review commission	2 with at least 20 people
CCACD	1 with at least 8 people
Urban forestry commission	2 with at least 30 people
Public presentation	1 with at least 75 people
League of Women Voters	1 with at least 12 people

Table 7. Meeting attendance for the South Waterfront Greenway Development Plan. (Source: Portland Parks & Recreation Bureau 2004.)

	Open House 1	Open House 2 (at least 60 people attended)	Open House 3 (at least 35 people attended)
Event	Review of existing conditions and analysis Review of three alternative concepts Survey of preferences Newsletters Project primer and briefs Boat tour	Presentation of concept design plan for comment Review of concept design alternatives for the Central District Survey of preferences Newsletters Slideshow	Presentation of schematic design plan for comment Review of schematic design alternatives for the Central District Survey of preferences Newsletters Slideshow

Table 8. Greenway development open house events. (Source: Portland Parks & Recreation Bureau 2004.)

In the South Waterfront Urban Design & Development Update Project (2006), the project organizers made an effort to "convene an open public process with South Waterfront landowners and developers, community representatives, and affected City bureaus to work together in the preparation of a refined and ongoing urban design process for the South Waterfront subdistrict" (City of Portland 2006). They created a project advisory group (PAG) and conducted a public walking tour, public open house, and several public briefings with the Portland Design and Planning Commissions (PDC). The PAG and PDC were involved in five meetings, a walking tour, a design charrette, an open house, and other activities (see Table 9).

Date	**Topic**	**Notes**
Oct. 6, 2005	Design Commission Initial Briefing	Gather final comments on the scope of the project
Oct. 11, 2005	Planning Commission Initial Briefing	Gather final comments on the scope of the project
Oct. 20, 2005	Project Advisory Group Meeting 1	
Nov. 21, 2005	Project Advisory Group Meeting 2	
Dec. 2005	Design Charrette	Examine the current urban design assumptions and direction for South Waterfront.
Jan. 17, 2006	Project Advisory Group Meeting 3	
Feb. 8, 2006	Open Hose	Update the proposed Public Views and Visual Permeability Assessment and the draft Urban Design and Development Framework

		Plan. Presentation and Question Answer session.
Feb. 15, 2006	Planning Commission Briefing	Brief the Design Commission on the draft findings of the design charrette.
Mar. 2, 2006	Design Commission Public Hearing	
April 17, 2006	Project Advisory Groups Meeting 5	

Table 9 South Waterfront Urban Design and Development Update Project (City of Portland 2006)

In the South Waterfront Greenway Trail Project (2017), there were four community outreach phases. During the latter three phases, the design options were shared with the community, and community members gave the designers feedback to refine their design options. A summary of the outreach phases is shown in Table 10. After these four outreach phases, a project advisory committee meeting was held in November 2016 to discuss the project history, development plan, and community input.

Outreach Phase	Date	Goals/Objectives
1	July–Sept. 2016	✧ Identify key stakeholders for the project ✧ Understand community needs and assumptions ✧ Identify opportunities and challenges
2	Oct.–Dec. 2016	✧ Share design options with community ✧ Receive and analyze community feedback ✧ Use feedback to refine design options
3	Jan.–March 2016	✧ Reflect understanding of community feedback ✧ Present final design ✧ Receive feedback

4	April–June 2016	✧ Reflect understanding of community feedback ✧ Document final concept design, including: ■ Alignment of bike and pedestrian paths ■ Location, scale, and program of public gathering areas ■ Tree, shrub, and groundcover planting areas ■ Landscape materials

Table 10. Portland South Waterfront Greenway Trail outreach summary. (Source: Portland Parks & Recreation 2016; 2017; Author 2017.)

3. What is the community's role in the participation process?

In the Greenway Development Plan Phase 1, the community members participated by commenting on the concept and schematic designs for the Central District. They participated in the open houses, took surveys, and joined discussions. In the Greenway Trail Phase, the community members provided feedback on the trail design options and the final concept design. Generally, the community participated in discussions after presentations and surveys.

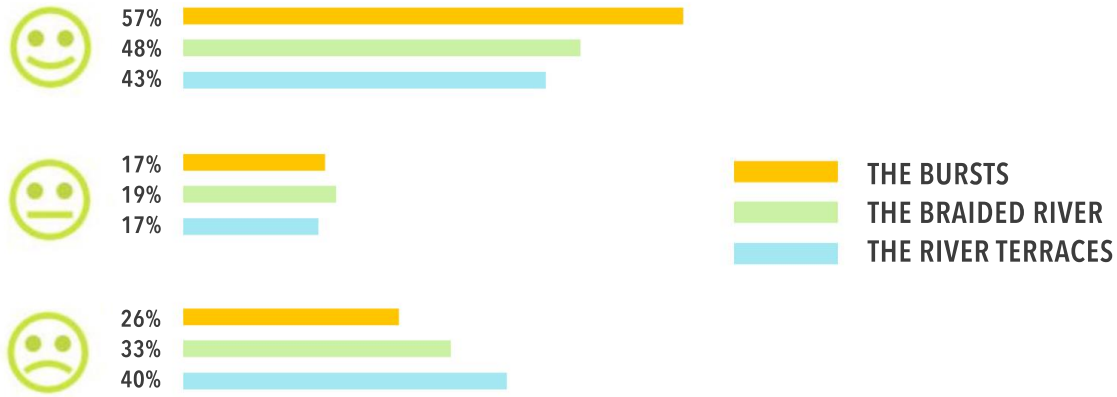

Figure 24. South Waterfront Greenway Trail public outreach feedback.

Source: Portland Parks & Recreation 2017

The most important public input of the project related to trail concept alternatives. The project organizers presented three greenway trail concepts—"the Bursts", "Braided River", and "River Terraces"—to the public. They created a survey, asking participants about their feelings

toward each concept. The survey results showed that community members liked the concept of the Bursts most and disliked it least. In contrast, the River Terraces concept was the least liked and most disliked. Therefore, based on the public survey feedback, the design team created a greenway trail similar to "the Bursts" concepts(see Figures 24).

4. What are the significant participation methods in this project?

The public participated in the project through community planning meetings, design charrettes, stakeholder advisory groups, open houses, site tours, discussion groups, surveys, and newsletters.

Figure 25. Public open houses 1 and 2. (Source: Portland Development Commission 2004.)

6. Evaluation of Participation Process

Based on Arnstein's "A Ladder of Citizen Participation" (1969), the public participation level for the South Waterfront Greenway project can be categorized as a "partnership" because the main concepts of the project were determined by the public. Thus, public participation in this project falls within the "degree of citizen power" section of the ladder.

The South Waterfront Greenway project utilized various participation methods, including listening to presentations, reading newsletters, and actively discussing and influencing design decisions. Community members received design charrettes and surveys in order to provide their

input. They also engaged in direct conversations with the design team to communicate their opinions. Their feedback was reflected in the design options presented in the later stages of the project and in the final draft (Portland Parks & Recreation 2016).

4.3 Case Study 3: Lafitte Greenway and Revitalization Corridor, New Orleans, Louisiana

4.2.4 Project Background

1. Location: The Lafitte Greenway is located in New Orleans. The brownfield site, which crosses seven historic New Orleans neighborhoods, once divided these neighborhoods.
2. Site scope: The Lafitte Greenway project includes the trail design for the entire 3.1-mile stretch of the Greenway and the Greenway Park (see Figure 26).

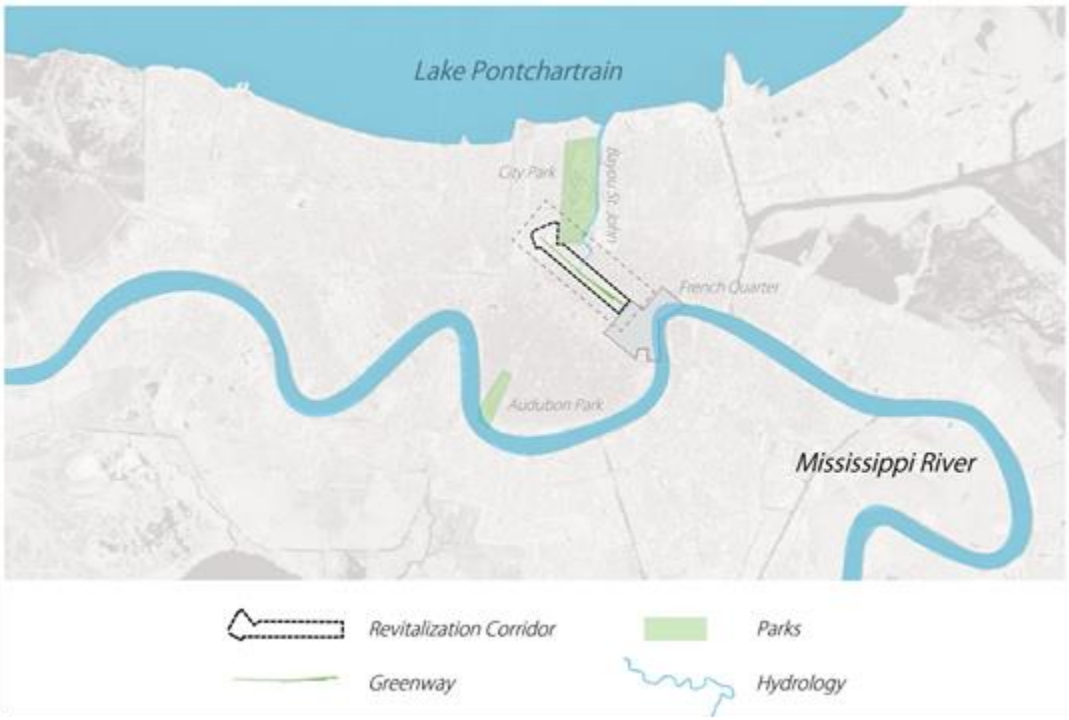

Figure 26 Lafitte Greenway Site Scope (American Society of Landscape Architecture 2013)

3. Former use: The site was once a shipping canal and railroad right-of-way.

4. Current use: Today the site is a multimodal transportation corridor that includes multiuse trails, recreation fields, green space, and beautiful and environmentally conscious landscaping such as shade trees, native plant meadows, bioswales, and storm water retention features.
5. Major contamination: Organic soil, much of which was contaminated with benzene (NOLA.com 2014).
6. Cleanup/remediation method: Remediation fencing and topsoil was placed around contaminated areas in order to alert excavators to the presence of contaminants and reduce potential risk levels.
7. Total cost: Approximately $9.1 million (City of New Orleans 2014)
8. Project mission/goal: While there is some park space and room for recreation in the area around the Lafitte Greenway, it lacks sufficient programming and connectivity to be ideal. A significant goal for this project was to provide the program elements requested by the local community while ensuring the safety of all visitors. Other goals were to play a positive role in the regional water management for the area; increase habitats for urban wildlife, reduce the heat island effect; support efforts for community gardens in the Lafitte Greenway; reduce soil contamination and buffer noise and light pollution along the greenway; encourage multimodal opportunities; and use design methods and techniques that support LEED® and Sustainable Sites Initiative standards. In addition, involve the community in the planning, design, and implementation of the plan; capitalize on the rich history of the area and support the preservation and advancement of the cultural heritage of the greenway's adjoining neighborhoods; and connect the greenway to open spaces and downtown New Orleans.

9. Client: City of New Orleans
10. Prime design team: Design Workshop; Applied Ecological Services; Bright Moments; Christopher Davala; Eskew+Dumez+Ripple; Elkins, Gandolfo Kuhn; GreenPlay; Julien Engineering; Walter Kulash; Michael Willis Architects; RCLCO; Three Fold Consultants; and Moon Design
11. Timeline: In 2005 Hurricane Katrina devastated New Orleans, destroying the area that is now the Lafitte Greenway. This site was utilized to house residents from the surrounding neighborhoods in temporary FEMA trailers. The next year, a group of citizen activists formed the Friends of Lafitte Corridor, which,

Figure 27. Photographs from before and after the creation of the Lafitte Greenway + Revitalization Corridor. Source: City of New Orleans 2014; Friends of Lafitte Greenway 2017.

in 2007, put forth a plan by Brown + Danos Landdesign to construct a trail from Basin Street to Canal Boulevard. This same group sponsored the Waggonner Ball plan in 2010, which proposed extensive use of the Greenway property for storm water management. Also in 2010, Design Workshop was retained by the City of New Orleans to prepare a revitalization plan, master plan, and construction documents for the greenway. In 2011 two community workshops were held to get community input, and in 2012 a third community workshop was held to review the construction documents and full drafts of the master plan and management strategy report. Construction began in 2014 (a community meeting was held before construction began). In 2015 the greenway opened to the public (see Figure 27). (American Society of Landscape Architecture 2013; City of New Orleans 2014; Friends of Lafitte Greenway 2017)

4.2.5 Design Features and Strategies

(1) Environmental Considerations

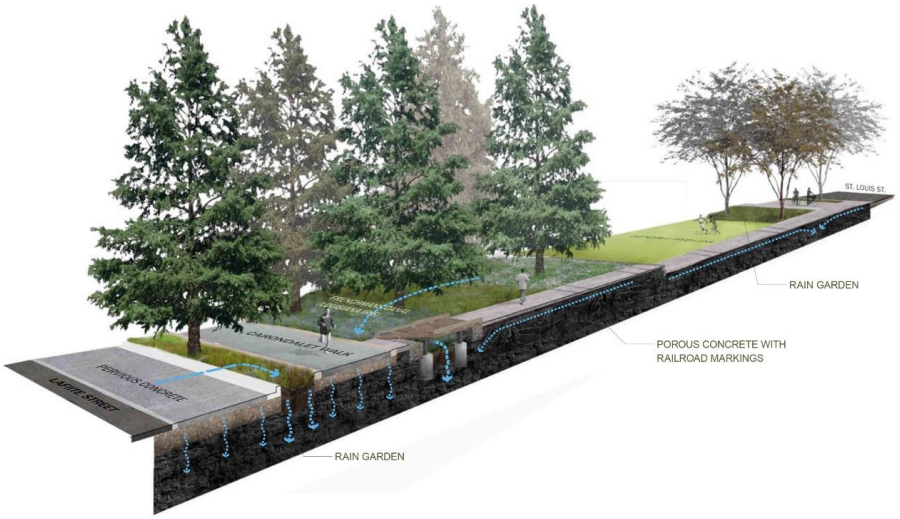

Figure 28. Typical rain garden cross section, located at Lafitte and St. Louis Streets between N. Claiborne Avenue and Galvez Street.

Source: American Society of Landscape Architecture 2013.

The site's original canal and railroad are visible in the greenway's use of linear rain gardens and its multimodal transportation network. Research on hydrology revealed that the greenway is located at a high point and actually causes localized flooding of adjacent homes and businesses. One of the greenway's goals is to capture one hundred percent of storm water onsite. Thus, it incorporates strategies to mitigate storm water runoff, including recreation fields that double as natural storm water reservoirs (see a typical rain garden cross section in Figure 28). This reduces the amount of drainage that collects on both sides of the greenway, causing flooding problems for businesses and residents.

(2) Connectivity and Design Programs

Figure 29. Design programs for the Lafitte Greenway.

Source: City of New Orleans 2014.

A significant goal of the project was to include program elements chosen by the local community while still ensuring the safety of visitors. Instead of acting as a barrier between neighborhoods, the greenway seeks to unite residents and foster community interaction. Its trail weaves through fields, orchards, rain gardens, and recreational spaces, creating dynamic

experiences across the site. Gathering spaces were designed by transforming the existing canal (see Figure 30, upper left) and a city-owned building (see Figure 30, lower right) into community recreation and event spaces.

The site has historic flooding issues that needs significant storm water management. As a brownfield site there were 13 percent of contaminated soil that needs to be cleaned up. Another major challenge for Lafitte Greenway came from the context: the divided community need to be united in both transportation and social aspects on this common ground. Also, it was critical to involve multiple design elements and ensure the safety for the residents and visitors outside the neighborhood.

The greenway development uses design methods to connect the neighborhood to open spaces and downtown New Orleans. It is used as a "local traffic hub" as well as a social destination. This improves the accessibility for nearby neighborhood. The designed programs provide more opportunities for outdoor sports, recreational and social activities, which promotes public health and enhance social connections. The increase tree canopy also support habitat for urban wildlife, reduce heat-island effect and provide human comfort.

4.2.6 Participation Review

1. Who is the community?

The project's community engagement approach included all segments of the New Orleans community, with a specific focus on the neighborhoods and organizations within the corridor.

Various stakeholder groups were involved in planning for the Lafitte Greenway, including the Friends of Lafitte Corridor, community members, and students from the local high school (Warren Easton High School) and elementary school (Cabrini Elementary School).

Community members included not only residents of the Lafitte and Iberville neighborhoods within the corridor, but also residents from outside the corridor. At the second public meeting for the project, more than 40% of attendees were from outside the corridor.

2. What is the participation process?

Based on the data collected, I created a participation framework for the Lafitte Greenway (see Figure 30).

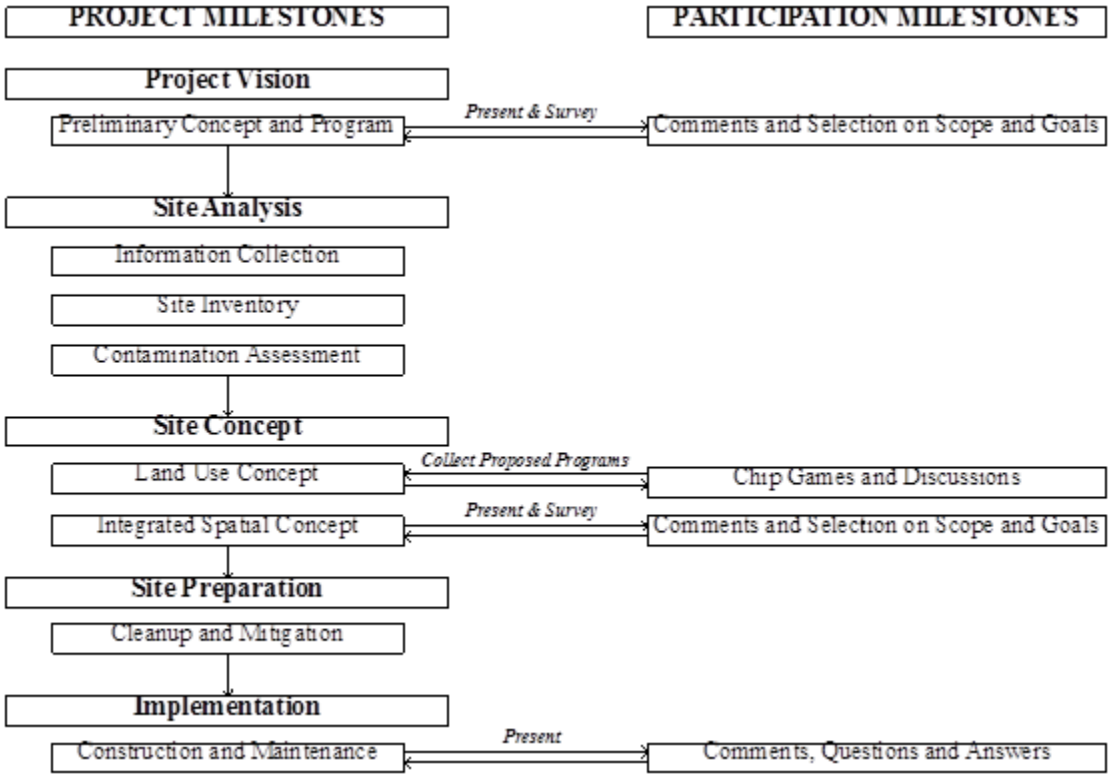

Figure 30. Lafitte Greenway + Revitalization Corridor participation framework (Author 2018)

Three public workshops were held during the planning and design process for the Lafitte Greenway. The first included an open studio, discussion, chip games, and public meetings. The proposed programming, design inspirations, potential strategies, and locations for the

programming were discussed; feedback from the public was taken into consideration when creating the initial design.

In this project, chip games were a significant participation method. A chip game is a collaborative exercise; playing chip games allowed community members to suggest what types of park facilities and landscape treatments they felt were appropriate for the greenway. The attendees at the first workshop played the chip game twice, and the consultant team compiled the results (see Table 11). Various stakeholder groups—including the Friends of Lafitte Corridor, Lafitte and Iberville community members, and students at Warren Easton High School and Cabrini Elementary School—also played chip games.

The foundation for the chip games was developed through recommendations for space standards for outdoor recreation facilities by Time Saver Standards for Landscape Architecture and the National Recreation and Park Association (NRPA), based on the corridor's population of 13,508. Table 11 shows the programmatic uses that the Time Saver Standards recommends. The chip games allowed the consultant team to develop a local program for the corridor that could also be used as a guide for the City of New Orleans (City of New Orleans 2014).

In the second public workshop, the focus was on voting about the preferred master plan alternatives. The public discussed storm water principles, greenway program alternatives, and design concepts and principles for the corridor. Two public meetings, a presentation, discussions, and keypad polling were used as participation methods during this workshop.

The last workshop, in contrast, focused on informing the public about the final plan and construction details for the Lafitte Greenway. Residents of the surrounding neighborhoods learned about the site remediation plan and the scope of the project, and they were able to view the final draft of the greenway master plan and the corridor revitalization plan.

All three of the workshops were preceded by community outreach; project organizers produced and distributed door hangers, created robocalls, and wrote newsletters to inform the public about the workshops and greenway planning process. For those who could not attend the workshops, materials and polling were available online (see Figure 31 for a summary of the participation process).

	RECOMMENDED PARK AMENITIES CALCULATION BASED ON CORRIDOR POPULATION			GREENWAY NEED	GREENWAY PLAN
	National Standard (based on Time Saver Standards and NRPA)	National Standard Suggested Amount	Existing in Corridor	Chip Game Suggested Amoung (Average)	Greenway Plan
Amphitheater			0	0.5	1
Athletic Field	1/5000 people	2.7	0	0.5	4
Baseball/ Softball	1/2000 people	6.8	9	1.4	3
Basketball Courts	1/1000 people	13.5	3	1.6	4
Bocce Ball			0	0.5	6
Chess/Checker Tables			0	0.6	12
Children's Pool			0	0.3	1
Community Garden	1 acre/3000 people	6.2 acres	4 gardens	2.6 acres	3 gardens
Contemplation Space			0	0.1	1
Dog Park			0	0.5	1
Football	1/8000 people	1.7	0	1.0	1.5
Frisbee Golf			0	0.1	0
Horseshoes	1/2000 people	6.7	0	0.6	6
Kayak/Canoe			0	0.3	1
Kick Ball			0	0.1	1
Multi Court	1/2000 people	6.7	0	0.4	0
Open lawn			0	1.6	4
Open Water			2.5 acres	3.3	0
Orchard			0	2.3	2
Parking for recreation			0	22	0
Picnic Shelters			0	1.9	13
Playground	1/1000 people	13.5	10	1.4	2
Public Art/Historical Markers			0	6.0	10
Skate Park			0	1.5	1
Soccer	1/8000 people	1.7	0	0.3	10
Swimming Pool			2	0.4	0
Tennis Courts	1/2000 people	6.74	21	1.1	2
Trail			.5 miles	1.5 miles	3.1 miles
Tree grove			0	2.6	8
Volleyball	1/2000 people	6.74	0	2.8	6
Wetlands			0	1.1	0

Table 11. Lafitte Greenway matrix of chip games and park amenities. (Source: City of New Orleans 2014)

3. What is the community's role in the participation process?

Community members made suggestions about potential greenway programming, design priorities, program alternatives, and design concepts, as well as the corridor revitalization, through keypad polling and discussions. They also had the chance to listen to presentations on and ask questions about the greenway master plan draft, management strategy, construction plan, and corridor revitalization plan draft. For those who did not attend the workshops, participation opportunities included online polling and access to planning documents.

In the first workshop, over seventy-five percent of the participants were supportive or extremely supportive of the greenway concept. They proposed pleasure bicycle riding, walking, or travel to and from places as activities for the greenway. Community members' overall programing preferences for the greenway included passive recreation, long-term operations, infrastructure, and active recreation (responses varied between polling locations).

During the second workshop, the community put forward design ideas about improving green storm water handling, increasing tree canopies, and adding multiuse trails to the greenway. They also expressed concerns about lighting and safety. These ideas were received and taken into consideration by the design team. The design elements of the preferred alternative master plan included programming, lighting, open water, planting, signage, and wayfinding (Design Workshop 2013). Specifically, the programming, lighting, and multiuse trail plans reflected the concerns expressed by community members during the workshop.

4. What are the significant participation methods in this project?

The participation strategy involved three workshops, eight public presentations, over seventy-five stakeholder meetings, online surveys, and participation game (chip game) events with twelve constituent groups (see Figure 31).

Figure 31 Community involvement in the Lafitte Greenway planning process.

Source: American Society of Landscape Architecture 2013.

5. Evaluation

It is reported by Design Workshop that the 3 Community workshops were effective for generating community input and involvement (City of New Orleans 2014). These workshops were open to public, and the community was encouraged to get involved. The greenway master plan was developed after the second community workshop, when the public made suggestions about design programs, voted on design alternatives, and commented about their concerns. Therefore, the community's opinions were successfully collected and reflected in the final design.

Since the community had the power to negotiate with the professionals in the decision-making process, public participation in this project fell into the category of "degrees of citizen power."

4.4 Discussion: Lessons Learned from Case Studies

4.4.1 Project Summary

In the sections above, three case studies were introduced individually. This section will focus on combining the three cases together, comparing and discussing the significant points, and develop the important factors learned from the three cases.

A summary of participation level and methods are shown in Table 3. Based on the conclusion in chapter 2, "the fullest kind of participation" in this research should be in high participation level, taking clients as important part from the beginning to the decision-making process, as well as driving ideas directly from the community. From the studied cases, it is noted that all three study projects used community-planning meeting and stakeholder committee meetings or advisory group meetings during the process. All of the three cases invite community engagement from the start of creating the vision of the project.

Project Name	**Historic Fourth Ward Park**	**South Waterfront Greenway**	**Lafitte Greenway +Corridor**
Participation Level	Degrees of Tokenism	Degree of Citizen Power	Degree of Citizen Power
Participation Method	Community-planning meetings; Public forums; Stakeholder committee; Study groups.	Community planning meeting; Design charrettes; Open houses; Advisory groups; Site tours; Discussion groups; Surveys; Newsletters.	Community planning meetings; Workshops; Public presentations; Stakeholder meetings; Surveys; Participation game (chip game)

Table 12 Case Study Participation Summary (Author 2018)

Another key method in all three projects provided design alternatives for the community to select. In the Atlanta project, the community was given three planning alternatives, making

comments for "likes and dislikes" and open comments. Both Portland and New Orleans project provided selection assignment for the community too, design alternatives were selected and reviewed by polling and meetings.

Despite of this, there are differences between the cases that determine the levels of participation. In the Atlanta projects, the community engagement mainly focused on "particular groups of people", which are the study groups and stakeholder committees. Although there are local residents selected to these groups, which had the opportunities to attended meetings, the proportion of them are low. Only 2 people are identified as local residents in the 26 people's committee (See Appendix D).

On contrary, both the Portland and New Orleans cases provided participation methods in a more open way. Open houses, design charrettes and workshops all had public sessions that the general public could participate. Also, there are online surveys for people who didn't have the chance to attend the participation events.

Also, in terms of "fullest participation", the design shall be created directly from the community. It is the interactive participation methods that makes fullest participation happen. For instance, the design charrettes used in Portland project and the chip games in New Orleans project, are two critical way of participation methods that provide the community to actively engaged in creating design ideas. These methods were helpful for professionals to communicate with the community, develop design concepts, and make design decisions together with the community. Other interactive methods include open discussion in meetings or after presentations, providing conversation, ask and answer opportunities between the community and the professionals.

4.4.2 Key Factors for Brownfield to Green Space Transformation

(1) Access

Engaging the community for public participation requires effort, as well as citizen power. Therefore, it is critical to provide appropriate access to project information for community members. Even if a project is not fully open to the public, community members must have the opportunity to get an idea of what will be happening in their neighborhood. Open houses and public meetings proved efficient and effective for eliciting community feedback in the South Waterfront Greenway and Lafitte Greenway projects. In contrast, when only selected groups or individuals are called to participate in a project, as in the Historic Fourth Ward Park, community representatives may not share ideas and seek feedback from the entire population of the neighborhood. While establishing an advisory committee with diverse community representatives is one solution to this problem, it is best to provide general access to the planning process for the public, through forums, online polling, and the like.

(2) Degree of Participation

From public hearings to design charrettes, there are various participation methods, which enable different degrees of participation from the community. There is a significant difference between participating by being present and by taking charge during the process. What is the community participant's role in a project? Should participants provide information to professionals (active participation) or simply receive information from professionals (passive participation)? For example, should community members have the opportunity to provide comments on a concept or simply to select a preferred design from among those concepts provided by the design professionals. Should professionals allow for both passive and active participation in order to gain a full picture of the project?

Based on "A Ladder of Citizen Participation" and the case studies, it is acknowledged

that the degree of participation is determined by the role of community in participation process. If community members can make selections and comments for the design they were given, like the Historic Fourth Ward Park, the degree of participation will be limited to "degree of tokenism". If community members can bring design ideas in the process, the degree of participation will be "degree of citizen power". For such degree of participation, the recommended methods include design charrettes used in Portland South Waterfront and participation games used in Lafitte Greenway.

(3) Continuity

When does public participation happen? Do the participants get involved at the beginning of the design process, during the design process, or even after the design has been completed and the construction phase has begun? According to "the fullest participation" discussed in chapter 2, it is best for public participation to occur at the beginning of a project, a common feature of the cases analyzed in chapter 4. The South Waterfront project is a good model for continuity, as it involved the community from the creation of the vision to the implementation of the design.

(4) Decision-Making Power

Finally, decision-making power is at the core of participation. Even if participants have abundant access to a project, a relatively active degree of participation, and early and continuous participation, if they do not have decision-making power, their opinions will not be reflected in the final design. At the same time, if professionals do not take participants' ideas into account, their participation will not be effective and may even be useless. Community participants should have the right to make comments, negotiate, and even make decisions on specific aspects of a project.

Although the degrees of participation vary among the case studies, it is acknowledged

that all of the projects respected decision-making power. In the Historic Fourth Ward Park case, the community's concerns, comments and preference for concept master plans are collected. Organizers and design professionals took community's opinions into consideration. In the Portland South Waterfront Greenway case, the community provided their ideas by engaging in surveys, design charrettes and direct conversations with the design teams; and their feedback was reflected in the design options then. In the Lafitte Greenway case, again, participation methods including surveys, design workshops and chip games let the community to provide their ideas and made the design decision.

CHAPTER 5

DISCUSSION AND RECOMMENDED APPROACH

5.1 The Significance of Participation in the Brownfield to Green Space Design

One of the significant aspects of this research is that, compared to participation in green space design, there are special challenges for the site, as the brownfields have complicated social, environmental, and economic issues. Such challenges differentiate this research from general participation studies due to the followings factors.

First, the urban brownfield properties are often located in urban centers. These brownfield sites are surrounded by existing divided neighborhoods like the Atlanta and New Orleans case studies. This division is both physical and social. In some neighborhoods, people may have lived and wished to improve the brownfields for years, which makes community participation especially important. The development is an opportunity for community members to improve their living environments, increase property values and job opportunities, enhance social interactions, and make their daily lives safer and more convenient. Engaging community members in brownfields projects could be time-consuming but worthwhile because participation is a way to respect the social context and make the design better meet the users' needs. Besides, many brownfield sites or former industrial areas are located in or near low income neighborhoods, where people have not traditionally had much political power. Therefore, participation in these areas is crucial.

Second, the brownfields have environmental risks that may cause the community more concerns than other sites. Previous practice showed that community members expressed their worries about whether the contaminants would influence public health (De Sousa 2008). Also, the contamination in brownfields may prove costly in remediation. With limited funding and resources, the remediation and development may be restricted during a recession. For instance, a part of the development in Portland was delayed because of the financial crisis, and the construction plan had to be adjusted due to the reduced funding. Compared to housing and commercial development, public green space development brings less economic benefits, especially in a recession.

Therefore, it is critical that professionals reduce the community's concerns, as well as meet the community's needs within the budget, making participation a more complicated task.

Third, even though contamination is one of the major characteristic of brownfield projects, sometimes it is not where participation activities focused on. The study cases did not show evidence that there was participation emphasis in either cleanup or remediation process. Although neighborhood specific inventories were created from the community, risk assessment and analysis were mainly done by scientific professionals, not local residents.

Besides, a research by Spiess showed that "contamination was not an issue" in his selected case studies: Olympic Sculpture Park, Harborview Medical Center and Rainier Court in Seattle, WA. Spiess found that almost all interviewees were aware of the contamination and prefer to focus on providing input on planning and design opinions instead of identifying and solving the contamination problems. Spiess indicated that in some cases, what would have been called 'non-participation' or 'tokenism' in Arnstein's research let the interviewees felt satisfied with this level of inclusion. Therefore, it is recommended that in terms of the communities, brownfield

projects may not have many difference as other design projects. In such circumstances, it is recommended that in different brownfield redevelopment phases, the degree of participation can be various; for instance, in risk assessment process, the degree of participation can be not as much as concept develop process since the community may not be interested to get involved. Higher degree of participation may not be necessary for all steps of brownfield process, certain participation techniques shall be selected based on the project goals and community's willingness.

However, as design professionals, risks do exist in these sites and it is the professionals' role to communicate with the community and let them be aware of the potential risks. At this point, community participation has educational meanings for the community, since the professionals aim to convey new information to people. If community members are more interested in the reuse design process, more complicated and active participation shall be encouraged in the design process.

Finally, because the possible use options for brownfields are limited by contamination and remediation levels, such projects usually have limited concept and spatial design options. It is challenging to interpret these situations in brownfield sites with scientific and design languages for the general public. Although no specific information in the case studies showed participation as a tool to reassure people about reuse of the site, generally, reuse options shall be mentioned in participation process such as community meetings, design charrettes and discussions etc. These participation activities also have educational meanings because the professionals may introduce current condition and explain what reuse options are available and why.

5.2 The Players' Roles

There are a number of stakeholders involved in a brownfield redevelopment. De Sousa

categorized these stakeholders into four types: economic, environmental, social, and other players (2008).

1. Typical "economic" stakeholders:
   (1) Landowners: the owners of brownfield properties who are responsible for the environmental problems and cleanup costs;
   (2) Developers: whose primary objective is to make a profit and maximize their financial returns;
   (3) Lenders: who are primarily concerned with protecting their investment and avoiding environmental liability;
   (4) Government agencies: which are economic development-oriented, such as the Brownfields Economic Development Initiative grant program administered by the U.S. Department of Housing, usually promotes brownfield redevelopment as a way to stimulate economic development and generate employment and tax growth.
2. Typical "environmental" stakeholders:
   (1) Government agencies: primarily responsible for regulating brownfields, given the initial focus on contamination issues, with local departments also engaged in restoring habitats and generating parks and open spaces for the development;
   (2) Environmental consultants: responsible for assessing pollution levels and risks in brownfields and developing and overseeing cleanup strategies.
   (3) Community members: They are directly affected by current situation and the development in the future. If the site has environmental issues, local neighborhoods are already exposed to contaminations and unhealthy threats.
3. Typical "social" stakeholders:

(1) Community members: The local community is often concerned with the impact of the project on their neighborhood. It is the role that community members play in the participation that determines the level of participation (Arnsetin 1969). If the community members are only educated or cured during participation, the participation level is "Nonparticipation." If the community members have some opportunities to hear and be heard but with no power to make a decision, the participation level is "Degree of tokenism." If the community members have the power to decide and manage the participation, the level is "Degree of citizen power."

(2) Community development corporations: are flexible and play multiple roles, including education and outreach.

4. Other stakeholders:

(1) Lawyers: work with various stakeholders to provide representation and advice regarding actual and potential liability, remediation, reuse, and financing issues;

(2) Brownfields associations and networks: create linkages among the private industry, government agencies, and non-governmental organizations and seek to influence policy-making as a group;

(3) Nonprofits: aim to support some issue or matter of private interest or public concern for non-commercial purposes.

5.3 The Professional's Role

The case studies highlighted in Chapter 4 show that participation in projects transforming brownfields into green spaces is positive and effective. What should professionals do to promote "good" participation in projects of this type? First, professionals should reduce the public's concerns about brownfields by providing adequate project information and assuring community

members that brownfield sites can be cleaned up and reused properly. Second, when possible, professionals should provide opportunities for both active and passive public participation, collecting community members' ideas and making them feel valuable. Third, professionals should provide community members with decision-making power. Although this is not always feasible, professionals should take the public's opinion into consideration as much as possible. If conflicts and misunderstandings with the community arise, professionals should communicate and explain the issues to the community members. For different steps of brownfield redevelopment, professionals should make every effort to engage appropriate degree of participation with the public.

5.4 Proposed Participation Guideline

1. The Framework

Based on the participatory brownfield redesign framework and the case studies above, a participatory brownfield to green space design guideline is created by the author. The categorized processes are as follows:

（1） Pre-design Process

1) Project Vision: including first concept and program;
2) Site Analysis: including collect information, site inventory and contamination assessment;

（2） Design Process

1) Site Concept: including land use concept design and integrated detail design;

（3） Implementation Process

1) Site Preparation: including cleanup and mitigation processes;
2) Implementation: including construction, management and maintenance

This framework is firstly summarized from the models studied in chapter 3 (See Figure 5-8), as the brownfield redevelopment framework shown in Figure 9. Then the community's role in brownfield redevelopment is identified in Table 2 and a participatory brownfield redevelopment framework with participation milestones linked with brownfield redesign milestones is developed as Figure 10. Next, in chapter 4 Figure 10 is used as a tool to evaluate the participation process of each cases. It is noted that Figure 10 is a theoretical framework, and participation practices are not restricted to be fitted in Figure 10. Therefore, meanwhile, the case studies are supplements to integrate the final framework as a guideline for participation practice with several recommended methods and techniques.

Also, since the final framework and guideline is derived from the selected studied models and three case studies, it is inevitable that the framework can't fit all kinds of projects, specifically brownfield projects with several site-specific preparation and complicated social context. However, this research provide a methodology to research on participation in brownfield projects and recommendations for potential participation activities.

2. The Proposed Guideline

Although there are several opportunities for planners and designers (the professionals) to involve the community in each step, this participation guideline is only focused on the design decision making parts, which are the steps of project vision, site analysis, and site concept.

In each step, there are five significant questions for planners and designers to ask:

(1) Goals: What do you want to have after this step is completed?

(2) Expected Input: What information would you like to collect from the community?

(3) Preparation: How will you prepare to communicate with the community?

(4) Questions: What questions will you ask, and what topics will you discuss?

(5) Methods: What kinds of participation methods will you use? How will the information be gathered and integrated into the design/ plan?

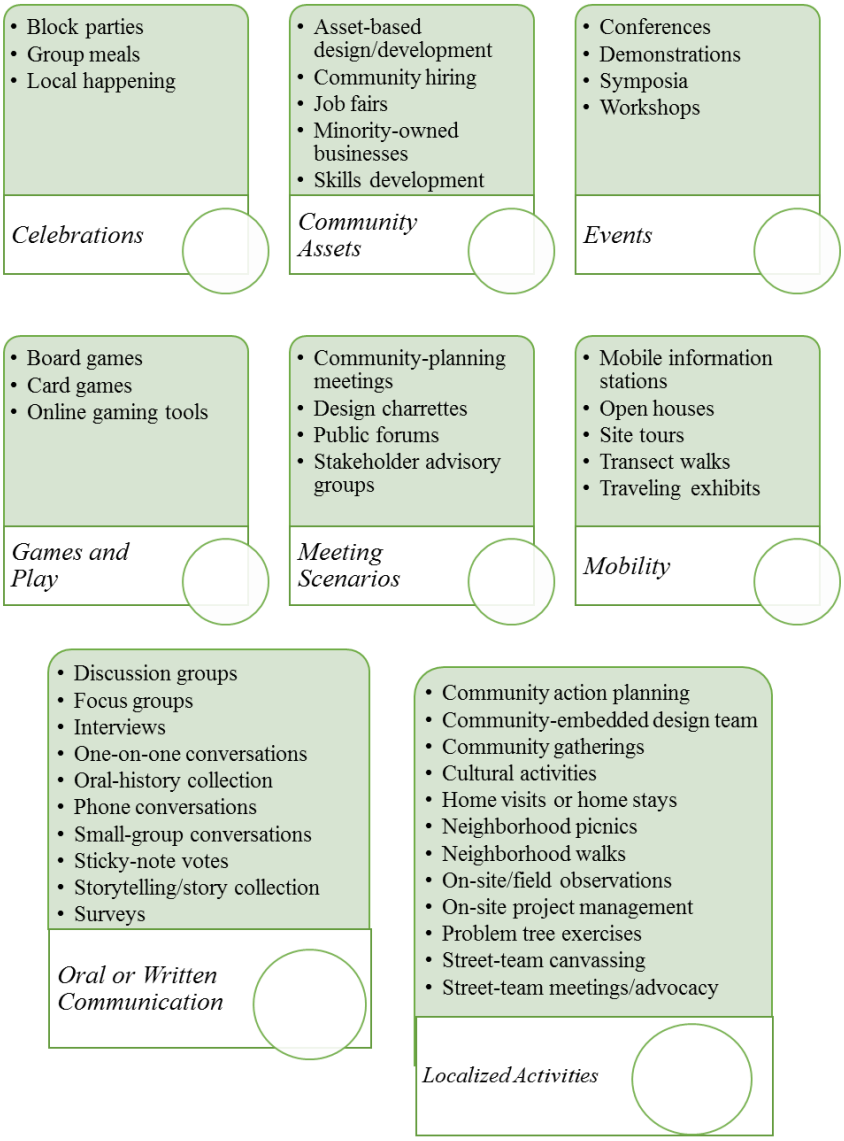

Figure 32 Methods of Engagement (Abendroth and Bell 2006)

It is important to determine appropriate ways to engage community participants. Through the potential of participatory action, communities are empowered to join in democratic decision making to establish their priorities, define their goals, and build consensus (Abendroth and Bell 2016; 322-25). The following methods are summarized by Abendroth and Bell (2016) according

to ways of promoting interaction, which is a helpful reference for the professionals to engage the community in appropriate ways (See Figure 32).

Based on the participatory brownfield redesign framework (See Figure 10) and the case studies above, a participatory brownfield to green space design guideline is created by the author. There are five steps in the process. Although there are several opportunities for planners and designers (the professionals) to involve the community in each step, this participation guideline is only focused on the design decision making parts, which are the steps of project vision, site analysis and site concept.

Step 1: Project Vision

The participation goal in the project vision step is to develop a common community vision. It is expected that the community's input will be collected regarding their needs, opinions, and other comments about the site. Once the stakeholders, especially the community members, are targeted, the professionals can start working on the participation process.

Challenges in project vision participations include: community members may not be willing to participate if they think they are not design or environmental professionals; there may not be much comments and feedback if the community is not motivated to participate; and the data collected from the community can be excessive, without scope or category, among others.

Strategies to meet the challenges include: encouraging participation by expanding the outreach; preparing information using language the general public can understand on newsletters, websites, mail, and other media; letting the community know it will influence the development and that it is qualified to be involved through personal experiences and ideas; setting clear goals and objectives during the process; and gathering the community's input from different categories.

The preparation can include basic information for the property, including urban planning codes, commercial aspect analysis, cultural and environmental protection, and legal issues. (Grimski et al. 2012). This information can be delivered in community planning meetings, stakeholder advisory meetings, study group discussions, open houses, workshops and charrette presentations, and websites. Another important aspect of this step is to interpret basic cleanup and mitigation information for the community. Since many brownfields have the characteristic of contamination, which is harmful to the environment and public health, the community may have concerns, and it is the experts' responsibility to eliminate them.

Questions for the community include: What do you think about this area? Should it be more active by having children's play areas and event spaces, or quieter such as passive lawns and rest areas? What goals do you seek in this project? What kinds of people (parents and children, young adults, seniors, etc.) do you think have more needs in using this area? What strategy would you recommend to realize this vision?

The community's input can be collected via meeting discussion records and online or in-person surveys.

Participation Methods for Step 1: Vision

1. Community Planning Meetings

   Community planning meetings bring people together and encourage involvement from the public at large. Examples include:

   (1) Durham Performing Arts Center, Durham, North Carolina (Abendroth and Bell 2016)

   (2) Freedom Park, Atlanta, Georgia (Faga 2006)

2. Stakeholder Advisory Meetings

   Stakeholder advisory meetings gather a group of representative stakeholders assembled

to provide public input to the planning process. This group may also have members from the project team and design professionals. Examples include:

(1) Owe'neh Bupingeh Preservation Plan and Rehabilitation Project, Ohkay Owingeh, New Mexico (Abendroth and Bell 2016)

(2) Rebuild South Sudan Jallen School, Jonglei State, South Sudan (Abendroth and Bell 2016)

3. Study Groups/ Focus Groups

Message testing forum with randomly selected members of target audience. This technique can also be used to obtain input on planning decisions. Examples include:

(1) Nine-Mile Run Greening and Residential Mixed-Use Project, Pittsburgh, Pennsylvania (De Sousa 2008)

(2) Historic Fourth Ward Park, Atlanta, GA (Roy 2015)

4. Local Media and Website

Local media and websites provide information about the project and potentially serve as a venue for illiciting feedback from community residents. Examples include:

(1) Imagine New York Project, New York City, New York (Faga 2006)

(2) Eastern Manufacturing Facility, Brewer, Maine (Hollander 2010)

Step 2: Site Analysis

The site analysis step consists of three parts: data collection, site inventory, and contamination assessment. The data collection consists of two types of data: public information lists and neighborhood-specific data. Although there are common sources of public information (federal, state, regional, and local lists) in understanding a site, members of a community often have personal experiences with the sites in their area. There is often no substitute for the

interviews with these members in understanding the activities that have occurred there over time (APA 2010). It is also noted that there is no restriction on the site information a community member can provide; however, accurate scientific data such as soil components and contamination risk levels generally need to be collected by scientists.

The goal of this step is to learn about the site in a more local way and to obtain a neighborhood-specific inventory from the community. The expected input from the community includes personal experiences regarding the site, which is information that is not publicly available. The preparation materials can include presentations, newsletters, and website articles that show the collected public information.

Challenges in this phase may include professionals not being able to obtain accurate information from the community. Also, if only a few people had previously lived in the area, there may not be much community input. Therefore, the neighborhood-specific inventory may only contain a little information, but it could supplement the inventory created using public data.

Questions for the community include: Based on your memory, what is the history of this site? What is the historic land use? Are there any important events that have happened in this area? When you walked on this area, what did you see, and what did you think of the site? From the collected public data, what do you agree with, and what would you like to add regarding the site cleanup and design consideration? What kind of contamination and negative aspects are of concern to you? What do you think are the "positive things" and "negative things" that should be addressed?

The participation methods for collecting local information can include site walks or tours, community planning meetings, stakeholder advisory groups, open houses, workshops and charrette discussions, and online or in-person surveys and interviews.

Participation Methods for Step 2: Site Analysis

1. Surveys

In person surveys are one-on-one "focus groups" with standardized questionnaire or methodology such as "stated preference". Mailed surveys are also useful, which inquiries mailed randomly to sample population to gain specific information for statistical validation. Examples include:

(1) Bancroft School Apartments Development, Kansas City, Missouri (Abendroth and Bell 2016)

(2) Winterville Design Guidelines Charrette, Winterville, Georgia (University of Georgia 2017)

2. Interviews

Interviews are one-to-one meetings with stakeholders to gain information for developing or refining public involvement and consensus-building programs. Examples include:

(1) Freedom Park, Atlanta, Georgia (Faga 2006)

(2) Can City, Sao Paulo, Brazil (Abendroth and Bell 2016)

3. Site Walks/ Site Tours

A site tour will allow community members to visualize the changes that will take place on site. Example includes:

Piet Patsa Community Arts Centre, Viljoenskroon, South Africa (Abendroth and Bell 2016)

Step 3: Site Concept

After the site analysis, a reuse option should be determined. The goal in this step is to determine the uses that would improve the quality of life at the site and the uses that may match the community's needs. The expected input includes comments and opinions for the proposed

land use. It should be noted that this step is different from the community vision step because now the concept is discussed under environmental restrictions and legal liabilities.

The methods for creating land use concepts are numerous, and so are the preparation materials. If the final reuse option is a public green space, the types of public green space shall be introduced to the community. The common preparations are site inventory maps and site analysis reports. The report can be illustrated with base maps and analysis diagrams and presented in community planning meetings, stakeholder advisory groups, open houses, workshops, or charrettes. Free comment and discussion records shall be collected for design consideration. If the experts want the community to make choices on several design alternatives (like the Historic Fourth Ward Park), land use concept maps shall be prepared. Other ways to make selections include taking surveys and questionnaires.

Questions for the site concepts are either open-ended or a series of alternatives. Common questions include: What do you think this site could be? What would you like to see on this site? For instance, design elements like lawns, playgrounds, trails, bathrooms, more parking, event space, etc. What do you think of the design alternatives? Which one do you prefer and why?

Depending on the planning requirements, an integrated design concept for the site may need to be developed. The goal is to determine which design elements will be placed in the property that meets the community's needs and where. More detailed design concepts, such as the proposed activities, shall be taken into consideration. This step could also be seen as an in-depth design after the land use concept design.

In the integrated design concept step, more interactive participation methods are encouraged in order to closely engage with the community. Design charrettes and workshops, including discussion groups and participation games (like chip games in the Lafitte Greenway), are

encouraged. The preparation includes land use concept maps, site analysis, proposed design elements' drawings, and green space design significances. By reviewing what has been done, the community could have a continuous understanding of the design; introducing what works in the green space design could be helpful in expanding the community's mind to provide more design ideas.

Questions in this step include: What do you think of the land use concept? What and where would you like to see regarding this site and why? For instance, if the site is to be designed as a neighborhood park, where would you like to have a picnic/exercise/ see your children play/walk your dog? If there is plenty of space, would you like to have more design programs like a stake park, or leave it as a passive open space? What do you think of the design alternatives and why?

Challenges in this phase include the proposed elements from the communities possibly being too much to be implemented in a design, and some community members may have a model for the site in mind and want exactly what the model indicates, despite the adjustments. Solutions could include communicating with the community about the scope, funding, and space limitations of the site and working on design elements that are suitable for the site. The community's ideas could also be taken into consideration to create adaptable design elements or multi-use design solutions to meet their needs.

Participation Methods for Step 3: Site Concept

1. Open House

Like public meetings, open houses encourage involvement from the public at large. Examples include:

(1) The Steel Yard, Providence, Rhode Island (Hollander 2010)

(2) South Waterfront Greenway, Portland, Oregon (Portland Parks & Recreation Bureau 2004)

2. Workshop

Workshop is an informal public meeting that may include presentations and exhibits but ends with interactive working groups. Examples include:

(1) Klyde Warren Park Design (Abendroth and Bell 2016)

(2) Visitacion Vally Neighborhood Planning (Faga 2006)

3. Design Charrette

A charrette is an interactive, collaborative planning and design workshop that is used to engage a range of community stakeholders around a project, get their input and develop site designs in response to that input. Examples include:

(1) Harrison Park Plan, Ellijay, Georgia

(2) The Watershed at Hillsdale, Portland, Oregon (Hollander 2010)

4. Participation Game

Participation games are interactive participation techniques using local methods of communication and encouraging active dialogue and activities for collective decision making. Participation games include card games, chip games or model making etc. that involve the community using their hands as well as providing inputs. Examples include:

(1) Lafitte Greenway Revitalization, New Orleans, Louisiana (Abendroth and Bell 2016)

(2) Firm Foundation Project, Banjarmasin, Indonesia (Abendroth and Bell 2016)

Step 4: Site Preparation and Step 5: Implementation

Previous community members are also invited to make comments on the remedial investigation report, cleanup plan, construction plan, and the management of public information (APA 2010; Portland Parks & Recreation 2018). It is also reported that community members have the opportunity to volunteer in the cleanup process. These steps should be carefully

managed. For instance, in the cleanup process, the community could be involved as volunteers after receiving technical guidance in order to avoid safety issues.

CHAPTER 6

CONCLUSIONS

6.1 Framework Conclusion

Brownfield Redesign Milestones			Participation Milestones	Recommended Technique	Participation Level
Pre-design Process	Project Vision	First Concept and Program	Develop a Community Vision	Community Planning Meetings	Non-participation ~ Tokenism
				Stakeholder Advisory Meetings	
				Study Groups	
				Local Media and Website	
	Site Analysis	Collect Information	Provide Local Information	Surveys	Non-participation ~ Tokenism

		Site Inventory		Interviews	
		Contamination Assessment		Site Walks/ Site Tours	
Design Process	Site Concept	Land Use Concept	Determine Reuse and Design Options	Open Houses	Tokenism ~ Citizen Power
				Workshops	
		Integrated Design Concept		Design Charrettes	
				Participation Games	
Implementation Process	Site Preparation	Cleanup and Mitigation	Volunteer on Cleanup Programs	/	Non-participation ~ Tokenism
	Construction and Maintenance	Construction and Maintenance	Approval and Management Involvement	/	Non-participation ~ Tokenism

Table 13 Brownfield to Green Space Participation Framework Summary

6.2 Research Discussion and Conclusion

It is concluded by the theoretical study that reclaiming brownfields into public green space is beneficial because it enhances public health, guarantees city safety, integrates urban land use, and increases community satisfaction and property value. Though methods and processes may vary, it is then concluded by the case studies that such transformation is feasible through the participatory design process.

Based on the case studies, it is effective and acceptable to apply the following participation methods in brownfield to green space projects: site tours, focus groups, community planning

meetings, open houses, workshops, design charrettes and participation games like chip games. For example, site tour is a useful participation method in the site analysis step; design charrettes, participation games are useful to engage the community in developing site concepts. The community shows supportive attitudes when it has the "power of citizenship," and researchers remain doubtful of real participation when participation remains at the "tokenism level."

However, there is different opinions on the degree of participation if the community is involved in brownfield projects. Local neighborhoods are more likely to get involved in design process compared to contamination-related process, partly because they are more interested in the reuse of brownfields sites rather than the contamination in the sites. If so, a higher degree of participation in solving contamination issues may not be necessary. Therefore, it is not always the case that the higher the degree is, the better the participation will be. The degree of participation in brownfield projects shall follow project goals and community's needs case by case.

In order to promote better participation in brownfield to green space projects, the access, initiative, continuity, and decision power shall be considered. As design professionals, in the participation process, communication is the most significant aspect, as it is helpful in reducing the fears and concerns of the public and delivering useful information between the professionals and the public.

Compared to SEED method and other participatory processes introduced in chapter 3, this research develops a participation process specifically for brownfield to green space projects by providing:

1. Participation milestones for the steps where participation could be used;
2. Recommended participation methods which could be applied in each step.

6.3 Limitations and Recommendations for Future Research

There are also limitations and potential for this research topic.

First, the collected data are all from books, journal articles, projects, or governmental websites. Since participation is a practical method, in-depth questionnaires or interviews for both professionals and the public are needed to obtain personal opinions about the participation in each of the case studies. Second, although participation in brownfield to green space practice and research exists worldwide, this research only focuses on the United States. In addition, there are only three selected case studies although brownfields projects are much more complicated than indicated by the three studies. The developed framework is intended as guide and starting point, to be tested through further research and applications. Flexibilities remains in order to update the framework by more practice.

More ideas related to the topic may guide further research: How could the professionals improve the communication by delivering straightforward, easy-to-understand design language to the public so that it could effectively understand the project? What is the community's opinion on getting involved in the brownfield to green space design process? What are the shared significances for one specific reuse (not limited to green space but housing, commercial areas, etc.) options that participatory brownfield design could follow?

The remediation, reuse options, and design methods vary from site to site, and so do the community's needs. It is difficult to have a universal standard for all brownfield to green space participation projects, but it is this characteristic that also makes the practice very valuable. With more practice, we gain more experience for further research.

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APPENDICES

APPENDIX A (Source: Dennison 1998)

Table Top 20 Hazardous Substances

Substances	**Type**
1. Arsenic	Metal
2. Lead	Metal
3. Mercury, metallic	Metal
4. Vinyl chloride	Semivolatile organic compound (SVOC)
5. Benzene	Volatile organic compound (VOC)
6. Polychlorinated biphenyl	PCB
7. Cadmium	Metal
8. Benzo(a)pyrene	SVOC
9. Benzo(b) flouranthene	SVOC
10. Polycyclic aromatic hydrocarbon	PAH
11. Chloroform	VOC
12. Aroclor 1254	PCB
13. DDT	Pesticide
14. Aroclor 1260	PCB
15. Trichloroethylene	VOC
16. Chromium (+6)	Metal
17. Dibenz[a,h]anthracene	SVOC
18. Dieldrin	Pesticide
19. Hexachlorobutadiene	SVOC
20. Chlordane	Pesticide

APPENDIX B

Brownfield Common Mitigation Technologies

Technology	Mitigation Strategy		Main Technology		
	On-site	Off-site	Established	Innovative	Emerging
Air Sparging	✗		✗		
Bioremediation	✗			✗	
Bioventing	✗		✗		
Excavation		✗	✗		
Incineration		✗	✗		
Landfarming		✗			✗
Natural Attenuation	✗			✗	
Phytoremediation	✗				✗
Stabilization	✗			✗	

Source: Hollander, Kirkwood and Gold 2010

APPENDIX C SUBAREA 5 PLANNING COMMITTEE

John Barneymeyer, Freedom Park Conservancy
Jimmy Barry, NE Corridor Joint Venture (Barry Realty)
Saskia Benjamin, Georgia Conservancy and MLK District resident
Bob Bridges, The Simpson Organization
Chris Carrigan, Historical Concepts architectural firm
Dorothy Clayton, First Tabernacle Church
Anna Copello, NPU N
Judy Forte, National Park Service
Joan Garner, Historic District Development Corporation
David Hamilton, MPAC
Matt Hicks, Fourth Ward Alliance
David Laube, Ponce Park
Angie Laurie, Downtown TMA/Central Atlanta Progress
Elena Mansour, Inman Park, Real Estate Consultant (Keller Williams)
Jim McMahel, Poncey-Highland Neighborhood Association
Lydia Meredith, Tabernacle Baptist Church and NPU-M
Jonathan Miller, Inman Park Neighborhood Association
Matt Newburn, Euclid/Moreland
David Patton, NPU M
Scott Pendergrast, Little Five Points Business District
John Perlman, Ponce Park
Justin Segall, NE Corridor Joint Venture (Atlanta BeltLine, Inc)
Markham Smith, Smith-Dahlia/Friends of Historic Fourth Ward Park
Taylor Smith, Bryant Real Estate Partners
Richard Tucker, TPL
Jeremy Wilhelm, Inman Park resident
(Resource: Atlanta BeltLine 2009)