Integrating Water into Local and Regional Sustainability Planning

Case Stories from Sustainable Communities Grantees

EFCN environmental finance center network

Sustainable Communities Learning Network

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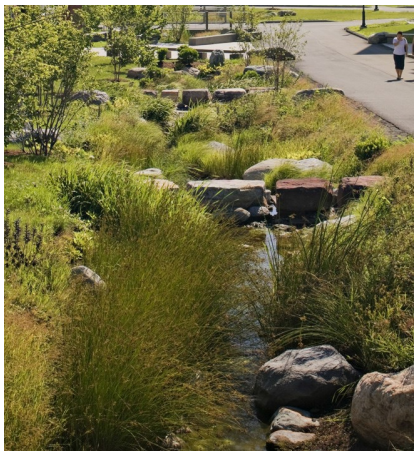
Contents

Introduction

This report was developed by the Environmental Finance Center Network through the HUD/EPA Capacity Building for Sustainable Communities program. Its purpose is to highlight Sustainable Communities grant communities that are successfully integrating water into their federally-funded local and regional sustainability planning projects. The case stories featured here demonstrate that water can be a central part of planning for a region's long-term economic competitiveness and quality of place. We hope these stories will inspire other communities to consider the ways in which water challenges and opportunities can be folded into their long-term land use, environmental and economic planning.



Source: Kittelson & Associates, Goody Clancy, and Perez APC for City of New Orleans. 2013. Livable Claiborne Communities Topic Boards.

About the Environmental Finance Center Network

The Environmental Finance Center Network (EFCN) is a national partnership of ten public universities funded in part by US EPA and specializing in the questions of *how to pay* for environmental compliance and improvement. As a member of the Sustainable Communities Learning Network, EFCN is providing technical assistance to recipients of grants from the federal Partnership for Sustainable Communities.

About the Partnership for Sustainable Communities

In 2009, three federal agencies – Department of Housing and Urban Development (HUD), Environmental Protection Agency (EPA), and Department of Transportation (DOT) – joined to form the Partnership for Sustainable Communities. The Partnership's goal is to coordinate federal housing, transportation, water, and other infrastructure investments to make neighborhoods more prosperous, allow people to live closer to jobs, save households time and money, and reduce pollution. Guided by six livability principles, the Partnership's policies and funding programs seek to increase access to affordable housing, provide more transportation options, and encourage sustainable economic development, while protecting the natural environment and human health.

Livability Principles

1. Provide more transportation choices.
2. Promote equitable, affordable housing.
3. Enhance economic competitiveness.
4. Support existing communities.
5. Coordinate and leverage federal policies and investment.
6. Value communities and neighborhoods.

A hallmark of the Partnership's work has been the Regional Planning for Sustainable Development and Community Challenge grant programs, which award grants to help communities develop plans that integrate housing, land use, economic development, and transportation and infrastructure investment. You can learn more about the federal Partnership for Sustainable Communities and its work to help towns, cities, and regions develop in more economically, environmentally, and socially sustainable ways, here: www.sustainablecommunities.gov.

Acknowledgments

This report was developed by the Environmental Finance Center Network through the Sustainable Communities Learning Network funded by the U.S. Department of Housing and Urban Development and the Environmental Protection Agency. The EFCN team that researched and wrote this report included Kristel Sheesley and Brent McCloskey. To develop the report, the team interviewed the nine organizations featured here, and we want to thank these individuals for their contributions, time, and inspiring work.

Cover photo credits (clockwise, left to right): GRPC. 2013. Draft Plan for Opportunity.; Emmons & Oliver Resources Inc. 2012. Catalytic Project: No Increase in Post Development Run-Off Volume – City of Fitchburg, WI; SRF Consulting Group, Inc. 2013. Strategic Stormwater Solutions for Transit-Oriented Development Draft Final Report; Kittelson & Associates, Goody Clancy, and Perez APC for City of New Orleans. 2013. Livable Claiborne Communities Topic Boards; Allegheny Riverfront Green Boulevard, Urban Redevelopment Authority of Pittsburgh, courtesy of Riverlife. 2013.

Featured Projects

This report includes case stories from nine 2010 and 2011 Community Challenge and Regional Planning grantees that are integrating water into their projects in a significant and successful way. Many grantees doing similar work have not been included due to time and space constraints. The following organizations are featured:

City of New Orleans (A)
New Orleans, LA | 2010 Community Challenge

Maryland-National Capital Park and Planning Commission (B)
Upper Marlboro, MD | 2010 Community Challenge

Metropolitan Council (C)
St. Paul, MN | 2010 Regional Planning

Gulf Regional Planning Commission (D)
Gulfport, MS | 2010 Regional Planning

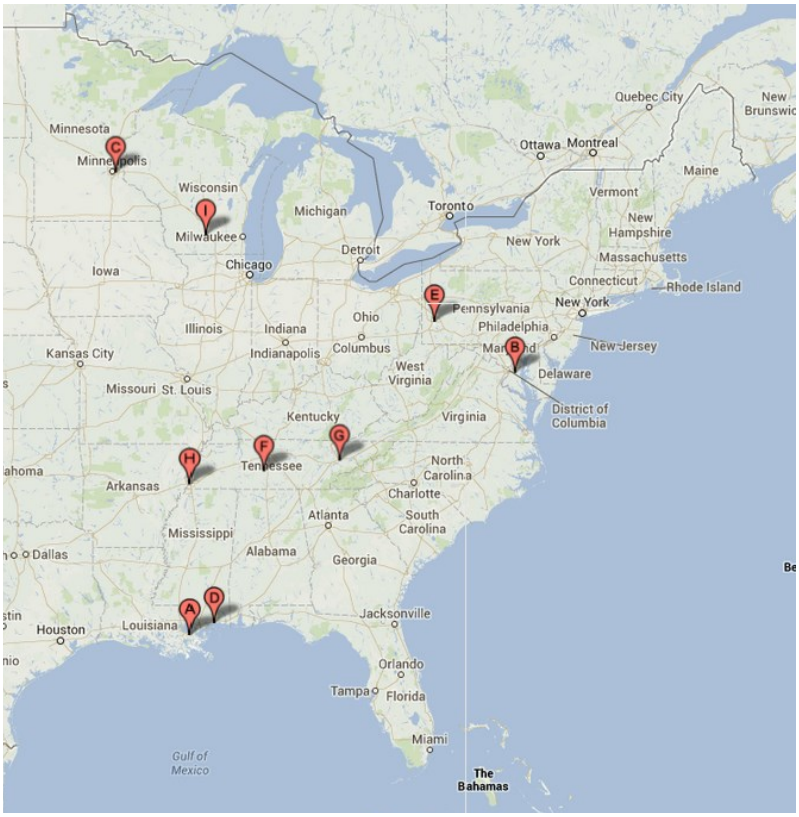
City of Pittsburgh (E)
Pittsburgh, PA | 2010 Community Challenge

City of Columbia (F)
Columbia, TN | 2010 Community Challenge

East Tennessee (G)
Knoxville, TN | 2010 Regional Planning

Shelby County Government (H)
Memphis, TN | 2011 Regional Planning

Capital Area Regional Planning Commission (I)
Madison, WI | 2010 Regional Planning



City of New Orleans

New Orleans, LA | 2010 Regional Planning | http://www.livableclaiborne.com/

Greening the street to manage stormwater and revitalize a community corridor

About Livable Claiborne Communities

In 2010, the City of New Orleans received a combined HUD Community Challenge and DOT TIGER II planning grant to plan for future development and infrastructure investments along Claiborne Avenue, including an elevated portion of Interstate 10 that bisects the neighborhood. The Claiborne corridor is a historically and culturally significant area but has undergone years of economic disinvestment. By developing land use and economic revitalization recommendations, Livable Claiborne Communities (LCC) aims to reunite a physically divided community, create transportation choices, develop neighborhood and economic revitalization strategies, and develop design strategies to address stormwater management, subsidence, multi-modal mobility, and urban design.[1]

The LCC study team developed several alternate scenarios for the future of the I-10 expressway, along with corresponding community development plans for each. Scenario-neutral recommendations were also developed; these were changes that had strong enough community support to be implemented regardless of which I-10 scenario is ultimately chosen. Having completed the LCC study in late 2013, the team is now moving into implementation with several pilot projects planned for the first year.[2]

Drivers for Addressing Water

Like much of the city, the Claiborne corridor is prone to flooding due to outdated and overtaxed stormwater infrastructure. The LCC study began shortly after the region's economic development agency GNO Inc. had produced an integrated watershed management plan for greater New Orleans, "Living With Water." This broader conversation enabled the LCC study team to bring a more nuanced perspective to addressing stormwater in the corridor. They decided that any proposed management practices should add value to the neighborhood; for example, using pervious materials for onsite filtration that are also aesthetically pleasing, or transforming blighted properties into stormwater detention areas that also serve as community parks and recreation areas.[2]

A critical factor in the project's success was that area residents well understand the need to improve stormwater management

Proposed greening of Lafitte Greenway.
Source: Kittleson & Associates, Inc. 2013. Scenario Boards.

along the corridor. Participants at community meetings held throughout the planning process identified stormwater and drainage as one of the major issues the study should address, behind only blight and affordable housing (see box, below). As residents discussed various scenarios at public meetings, strong consensus emerged around five goals, one of which was to "make aggressive efforts to manage stormwater and mitigate flooding."[3]

Integrating Water

Key goals of the LCC plan include implementing drainage, stormwater management and wastewater management strategies. The study's five core goal statements are:

- Preserve our identity by protecting our culture
- ***Find sustainable solutions for our flood-prone environment***
- Ensure access to economic prosperity
- Enhance transportation choice and access
- Guarantee managed change to benefit the existing community[1]

Community Support for Stormwater Management Expressed at Public Workshops, March 2013

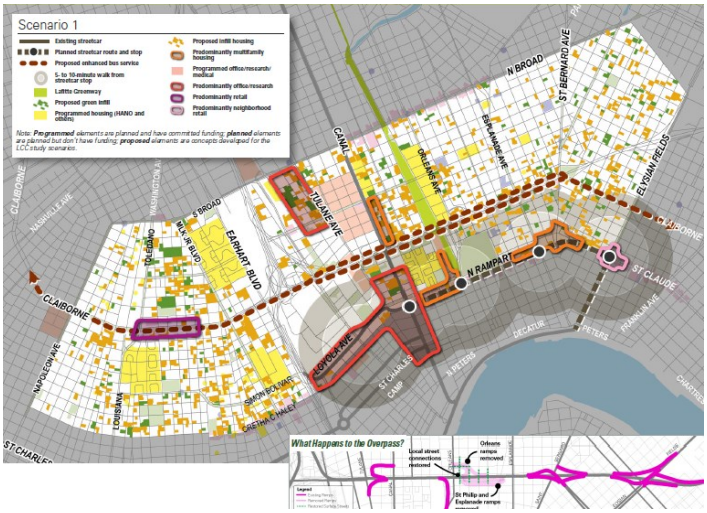
Written responses to the proposed goal "Find sustainable solutions for our flood-prone environment":

1. There is a clear need for this. Should be a required aspect of the changes.
2. Especially under the overpass where flooding always occurs.
3. Earmark maintenance.
4. Mitigate problem of mosquitoes in standing water during the summer.

Notes made during table discussions on priorities for stormwater control:

1. Stormwater management is more important than the farmers markets and bike lanes.
2. City should provide incentives for sustainable solutions.
3. Use innovative stormwater-management strategies.
4. Rainwater garden maintenance is critical; partner with schools to manage them and train kids

Source: Kittleson & Associates, Inc et al. 2013. Scenarios Development Report: Public Workshops Held March 16 and 18, 2013.



Livable Claiborne Communities developed a series of alternate community development scenarios for the area.
Source: Kittleson & Associates, Inc. 2013. Scenario Boards.

Consistent with these overarching goals, each of the alternate community development scenarios includes significant plans for urban re-greening and natural stormwater filtration and detention systems. Examples of proposed stormwater elements:

- Fill vacant lots with buildings and well-maintained green spaces, including rain gardens, so that rain rarely floods neighborhood streets and the water held in rain gardens slowly seeps into the ground.[4]
- Turn other vacant lots into community gardens, small parks cared for by neighbors, and rain gardens – all of which help eliminate flooding when it rains.[4]
- Restore Claiborne as a tree-lined, green corridor and transform it into "the most Complete Street in the world." The vision for this scenario is: "An effective natural system that uses clusters of rain gardens and other green spaces in formerly vacant lots has made flooding after heavy rains a thing of the past [and] nearly every vacant lot in the area has been claimed by infill houses, rain gardens and carefully tended green space."[4]

Many of these stormwater proposals received enough community support that the LCC study team recommend they be pursued regardless of what actions end up being taken on I-10. For this reason, a pocket park and an LID redevelopment project are two of the first pilot projects planned for implementation.[2]

Overcoming Challenges

- In a region that has undergone numerous planning efforts over recent years, the study team knew that it would be critical to show fruits of this study as soon as possible. The City of New Orleans found funding to convene an Implementation Team several months *before* the study ended. This team is using study recommendations to plan a series of pilot projects such as re-greened lots and sustainable development demonstration developments in high-visibility locations.[2]
- At the heart of the LCC study was engaging the community in discussions about their neighborhoods' future. While the team had extensive experience conducting public outreach campaigns, they learned a valuable lesson as the study progressed, namely that they needed to be fluid in their engagement efforts to respond to opportunities that arose. Rather than simply inviting residents to city-run meetings, staff responded to invitations to come to established community gathering venues. This allowed the project to get better penetration into the neighborhood, generated deep conversations among the community members, and brought new voices to the table that weren't there at the start.[2]

Promising Practices

- ***Basing priorities on issues the community felt were important.*** The study team knew that stormwater was a major problem for the corridor, but importantly, they began by confirming that residents perceived this as a high priority as well.
- ***Integrating with other planning efforts.*** The LCC study tied into regional watershed management planning led by the greater New Orleans economic development agency, which raised the prominence of their respective efforts and brought regional and local perspectives to bear on one another.
- ***Aligning with city-wide rezoning***, which was fortuitously underway at the same time as LCC. Planning staff have been able to respond to drafts of the new zoning ordinances with specific recommendations for onsite stormwater retention that emerged out of their work in the Claiborne Corridor.
- ***Tying in to funders.*** The Planning Office has forged relationships with several national funders interested in supporting the City's sustainability and resiliency efforts, much of which can be tested and piloted in the Claiborne Corridor. The LCC study has given funders evidence of the City's solid commitment to resiliency.
- ***Showing that recommendations will work in the Claiborne Corridor.*** Planned pilot projects are intended to demonstrate that new sustainability practices such as low-impact development techniques will look attractive and be functional here at home.

References

1. Livable Claiborne Communities website. http://www.livableclaiborne.com/
2. Interview with Ashleigh Gardere, Director, LCC and William Gilchrist, Director of Place-Based Planning, City of New Orleans, LA. November 7, 2013.
3. Kittleson & Associates, Inc et al. 2013. Scenarios Development Report: Public Workshops. http://www.livableclaiborne.com/download/scenario-report-05-13-2013.pdf
4. Kittleson & Associates, Inc. 2013. Scenario Boards. http://www.livableclaiborne.com/what-are-our-possibilities-for-the-future/default.aspx

Advancing a vision for transit-oriented development (TOD) within a challenging stormwater landscape

About the Southern Green Line Plan

In 2010, the Prince George's County Planning Department of the Maryland–National Capital Park and Planning Commission (M-NCPPC) was awarded a HUD Community Challenge Grant to develop a corridor action plan for transit stations in Prince George's County along the southern end of the Green Line of the metro DC rail system.

The Green Line Plan assesses existing conditions, establishes market-driven strategies, and prepares a phased implementation program for TOD at four metro stations. A key goal is to attract new federal and spin-off office tenants and mixed-income housing, facilitated by an efficient and effective multimodal transportation system.[1]

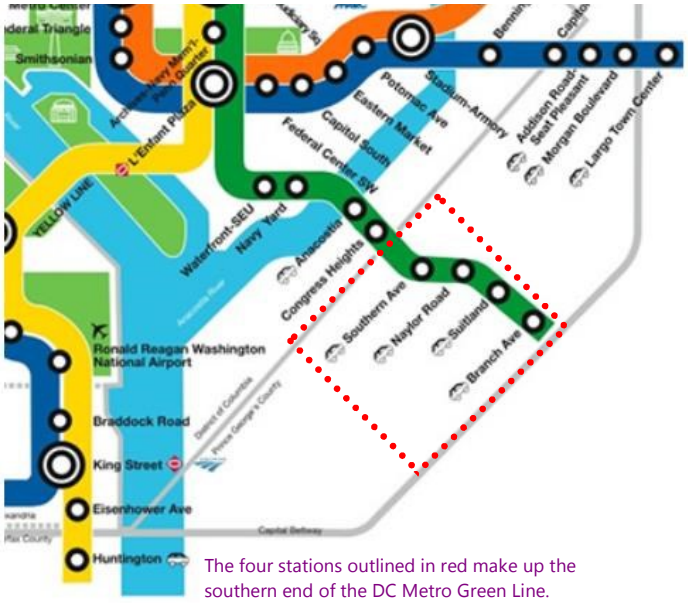
Drivers for Addressing Water

Located within the Chesapeake Bay watershed, Prince George's County is subject to Chesapeake Bay Total Maximum Daily Load (TMDL) requirements, which mandate that the County meet certain load reduction requirements for nitrogen, phosphorous and sediments.

These reduction requirements will be challenging to achieve in the planned Green Line station area TODs, due to the presence of sensitive environmental resources at or near the stations, such as wetlands, steep slopes and streams. Much of the area's existing development occurred before the adoption of requirements for woodland conservation, stormwater control and stream protection. Moreover, the area's rapid urbanization has contributed to habitat fragmentation, high imperviousness, and alteration of natural drainage patterns leading to increased erosion and stream destabilization and other ecological problems that must be addressed today. These constraints posed a significant challenge to the planning team, but they also provided an opportunity to advance create stormwater management techniques within planned station area redevelopments.

Integrating Water

The Green Line Plan's recommendations have been aligned with state and federal watershed restoration initiatives, including the Chesapeake Bay TMDL program, the Watershed Implementation Plan (WIP) and overall efforts addressing water quality in the Chesapeake Bay.



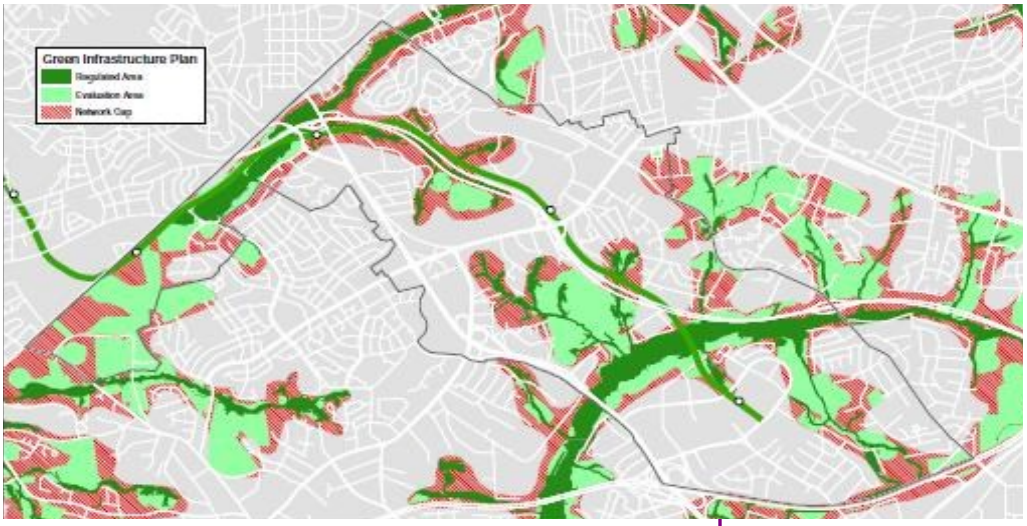
The four stations outlined in red make up the southern end of the DC Metro Green Line.
Source: M-NCPPC Southern Green Line Station Area Planning website.

The Plan specifies that redevelopment at the four station areas must meet certain stormwater requirements, including land use practices that focus on removing impervious surfaces as well as the use of site features that manage stormwater runoff and mimic pre-development conditions so that stormwater infiltrates the ground rather than flowing untreated into receiving streams.

It is the hope of the planning team that the framework encourages communities to not only meet stormwater requirements but also to integrate natural features into neighborhoods, identify gaps in the green infrastructure and open space networks, and realize other environmental benefits of concentrating density near Metro stations.[2]

To help developers incorporate sustainable stormwater principles within the station area TODs, the Plan includes information and tools addressing five environmental resource focus areas: [1]

- ***Watersheds and Stormwater Management***. The Plan identifies the area's watersheds and the impacts of untreated stormwater from impervious surfaces entering receiving streams. Through this effort, impervious surfaces and stormwater runoff were calculated.



Portion of the Green Infrastructure Network showing the location of the Southern Green Line Plane within the Network.
Source: M-NCPPC Southern Green Line Station Area Planning website. 2013.

- ***Wetlands and Floodplain.*** These are regulated areas that must be protected during development and redevelopment.
- ***Stream Corridor Assessments***. The Stream Corridor Assessment (SCA) was developed by the Maryland Department of Natural Resources as a tool to facilitate the process of protecting and restoring the state's natural resources. It identifies potential stream restoration/retrofit sites, and it provides a general assessment of overall stream health.
- ***Woodland Conservation and Tree Cover***. Another important assessment tool, this instrument helps planners identify the current amount of woodland and tree cover available while putting in place policies that help to minimize its loss. Woodland and tree cover is an important component in helping to control stormwater runoff.
- ***Green Infrastructure Plan***. 1,650 acres of the Plan area are within the designated countywide green infrastructure network, as outlined in the 2005 *Countywide Green Infrastructure Plan*.[1] The green infrastructure network consists of three types of resources: *Regulated areas* are environmentally sensitive features such as steep slopes, streams and wetlands with their regulated buffers and the 100-year floodplain. These resources are protected during the development process by laws, guidelines or regulations at the local, county, state or federal level. *Evaluation areas* may contain sensitive features such as interior forest, other unique habitats, and the environmental settings of cultural resources, that must be examined to determine whether any resources need protection. *Network gaps* are breaks in the natural areas of the network that could potentially connect regulated and evaluation areas.

Overcoming Challenges

- When construction of the Southern Green Line was completed in 2001, many of the stations were located in areas that were adjacent to or near environmentally sensitive areas such as swamps and wetlands as well as steep topography. Incorporating GI and treating stormwater has been a significant challenge due to the size of each station. The planning team has found that using available open space for treating and mitigating stormwater offsite may be a good compromise.[2]
- Due to the geographic location and the steep slopes surrounding many of the station areas, finding cost effective solutions has become challenging due to changes in stormwater regulations. Space limitations require more engineering and innovative practices that may have higher associated costs. Prince George's County, Maryland is noted for incorporating some of the first innovative GI solutions in the country. The planning team is currently working with experts in the field to overcome the geographic cost limitations with each station area.[2]

Promising Practices

- As is the case with other areas surrounding Washington, DC, many parcels near Green Line stations are owned and/or managed by the federal government. The Plan seeks to leverage partnership opportunities to construct GI facilities on federal lands adjacent to the station areas, which will greatly enhance the geographic area where GI practices can be installed.
- As a way to increase the visibility and opportunity for funding to complete components of the Plan, the planning team has aligned their implementation activities with the requirements of the Chesapeake Bay TMDL and the County's WIP. This ensures that once the plan is implemented it will be consistent with the most up-to-date requirements to improve the region's water quality.

References

1. Maryland National Capital Parks and Planning Commission. Southern Green Line Station Area Sector Plan. September, 2013.
2. Interview with Barry Gore, M-NCPPC Project Manager and Michael Zamore, M-NCPPC Planning Coordinator. Prince George's County, Maryland. Nov. 14, 2013.

Metropolitan Council / Saint Paul, MN

Saint Paul, MN | 2010 Regional Planning | http://www.corridorsofopportunity.org/

Creating an innovative green infrastructure framework to achieve multiple corridor redevelopment goals

About Corridors of Opportunity

Metropolitan Council, the regional planning agency for the Twin Cities area, was awarded a Sustainable Communities Regional Planning Grant in fall of 2010, at the same time that the Saint Paul Foundation and McKnight Foundation secured nearly $16M in grants and loans from the Living Cities Integration Initiative. These projects were merged in 2011 to form Corridors of Opportunity (CoO), an effort to develop comprehensive redevelopment plans for the areas surrounding transit stops along seven light rail corridors in the region. Goals include improving access to living-wage jobs, creating life-cycle housing choices, aligning workforce opportunities with local employment prospects, supporting existing businesses, improving bike and pedestrian connections, reducing energy use, and employing innovative stormwater management techniques that support TOD and manage runoff.[1]

Drivers for Addressing Water

One of the seven Corridors of Opportunity is the Green Line (formerly Central) Corridor, an 11-mile stretch along the planned Green Line light rail line connecting downtown Saint Paul to downtown Minneapolis. Local station area redevelopment plans call for integrating creative stormwater management techniques, including shared green infrastructure systems discussed below, a goal inspired by several key factors:

- The region is subject to robust stormwater volume control standards that have been in place for almost a decade, requiring the first inch of rainfall to be managed onsite for any development larger than one acre.
- The CoO project emphasizes that any new development should be transit-oriented (compact, walkable) and that it should provide new community open space, which has been in short supply, especially along the Green Line.
- Like many CoO corridors, the Green Line is largely built-out, which brings significant barriers to using green infrastructure, including contaminated soils, high density and a right-of-way crowded with existing utilities.

Within this context, the challenge and the opportunity for the Green Line was to ***develop a framework for achieving corridor goals of compact, transit-oriented development and new open space, while also meeting stormwater requirements*** and allowing flexibility to the developer in achieving these objectives.[2]

Integrating Water

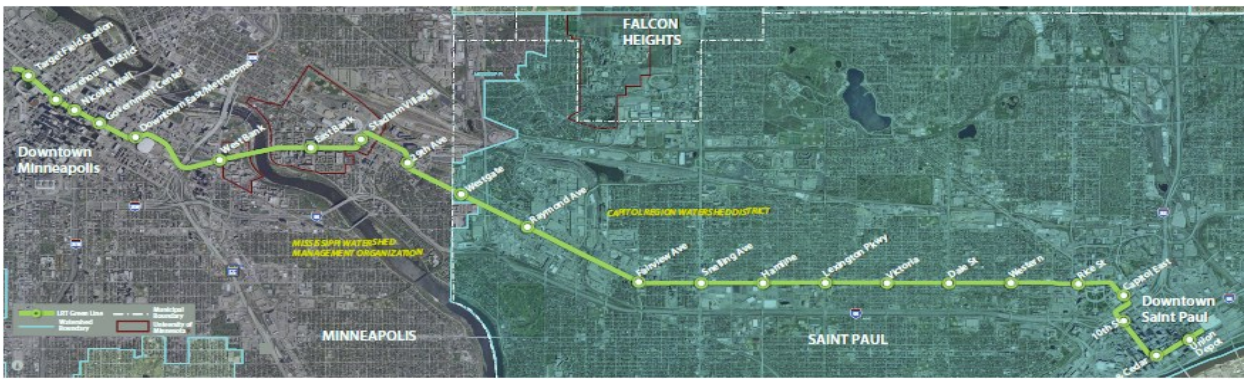
Because of the Green Line's focus on integrating innovative stormwater management principles into station area redevelopment plans, it was an ideal demonstration project within the larger Corridors of Opportunity program. In total, more than 20 such demonstration projects were conducted, covering a range of transit area development issues from job creation to energy efficiency, with the goal of developing strategies that could be transferred to other corridors in the region.[2]

The Green Line project – or more formally, the Stormwater and Green Infrastructure Planning Demonstration Project – set out to create a framework for implementing shared green infrastructure facilities on multi-parcel redevelopment sites along the corridor. The framework would enable developers to comply with existing stormwater mandates, reduce costs by sharing facilities, and achieve additional community benefits, especially the provision of open space.

To develop guidelines for shared stacked-function green infrastructure along the Green Line Corridor, the project team studied "precedent projects" from around the country including Normal IL (top), Minneapolis MN (middle) and the Green Line Corridor itself (bottom).
Source: SRF Consulting Group, Inc. 2013. Strategic Stormwater Solutions for Transit-Oriented Development Draft Final Report.

Overseeing the project was a stakeholder advisory committee comprised of the Cities of Saint Paul and Minneapolis, two local watershed management districts, and University of Minnesota, among others. Local engineering and planning firm SRF Consulting Group Inc. was hired to develop concept plans for four scenarios of shared, stacked-function green infrastructure (SSGI) – a term referring to shared GI amenities that achieve benefits beyond stormwater management. The team then created advanced site plans for parcels along the corridor that will be redeveloped in the near term. All plans included a public art component.

Metro Council / St Paul MN (continued)



The Green Line Corridor, site of the Stormwater and Green Infrastructure Planning Demonstration Project. Source: SRF Consulting Group, Inc. 2013. Strategic Stormwater Solutions for Transit-Oriented Development Draft Final Report.

The final report includes guidelines for cooperative green infrastructure approaches to stormwater management along the corridor, along with recommendations for replicating the model in other corridors. Findings indicate that shared green infrastructure (SSGI) can achieve a triple bottom line benefit, with economic, environmental and social improvements. Other key findings are that the SSGI approach is best applied through a public-private partnership led by the sponsoring city, and that SSGI will need to be adapted to the size and unique conditions of the site rather than applying a one-size-fits-all approach.[1]

Overcoming Challenges

- Metro Council and Saint Paul knew that developing effective guidelines for SSGI would be challenging from a technical and policy perspective, so they convened an advisory team ready to meet these challenges, with representatives from key agencies. The team met monthly and had candid conversations to air and address any issues that could be deal-breakers.[2]
- The team was clear from the start that the project would not add new regulations, so the framework is an above-standard approach that developers may implement voluntarily. To facilitate implementation, the team developed an informational brochure for developers, along with decision-making trees, flow-charts, and demonstrations of cost savings.[2]
- Timing was a particular challenge in this case, as light rail expected to begin service just 6 months after the completion of the study; many redevelopment projects are already underway. To help get the guidelines in front of the development community early enough to influence the projects, the team fast-tracked the above-mentioned informational brochure.[2]

Promising Practices

- This demonstration project was one of more than 20 distinct projects conducted as part of Metro's regional planning work. Critical to its success and transferability was maintaining strong connections between the project manager at the City of Saint Paul and the Metro Council. Metro synthesized information from all projects, kept everyone in the consortium informed of progress and milestones, and elevated individual projects to a higher level to connect with everything else going on in the region.
- The right group of partners was assembled for the advisory team; they represented staff, managers, and occasionally senior officials. The group captured multiple departments within agencies to vet all perspectives and address multiple needs.
- Even before the report was finalized, the team moved to implement several recommended actions in order to help build excitement and momentum. One recommendation was to demonstrate the framework's feasibility on an actual redevelopment site. A developer with an approved site plan on the corridor partnered with Saint Paul and its watershed district to evaluate feasibility, demonstrating interest but also the importance of very early coordination. A second recommendation was to adopt a resolution to support the framework, which has already been done by one local watershed district with Saint Paul expected to follow.
- The team tried to reframe the conversation about stormwater management to convey that it can also provide public assets. Many recent site designs along the corridor have addressed stormwater requirements using underground systems, thus the team was clear that SSGI must achieve triple-bottom line benefits, including vegetation and green space.
- The corridor project coordinates with a related study, an open space evaluation for the corridor led by Trust for Public Land. Before taking the GI resolution to the Saint Paul City Council for adoption, the team is waiting for the TPL report to be released, as it is expected to build additional support.

References

1. Corridors of Opportunity Central Corridor Stormwater and Green Infrastructure Demonstration Project website. http://www.corridorsofopportunity.org/activities/sgi.
2. Interview with Wes Saunders-Pearce, Water Resources Coordinator, City of Saint Paul, MN. October 23, 2013.
3. SRF Consulting Group, Inc. 2013. Strategic Stormwater Solutions for Transit-Oriented Development Final Report. http://www.corridorsofopportunity.org/sites/default/files/Strategic_Stormwater_Solutions_for_TOD_Final_Report.pdf

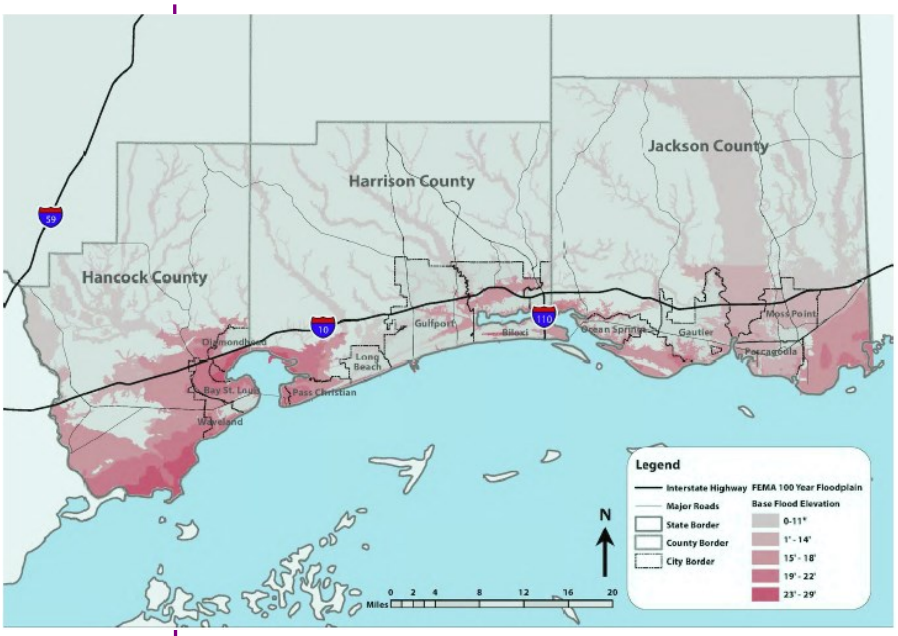
Gulf Regional Planning Commission

Gulfport, MS | 2010 Regional Planning | http://www.gulfcoastplan.org/

Shoring up the foundation of a water-dependent regional economy

About the Plan for Opportunity

Gulf Regional Planning Commission (GRPC) received a Regional Planning grant in 2010 to plan for a three-county area along the Mississippi Gulf Coast. The initial intent was to plan the development of an intermodal transportation system for the Coast, but GRPC realized this required looking at current and forecasted land use in the region. Eventually, the plan was broadened to include seven key areas of sustainability planning: transportation and land use, housing, water, food systems, air quality, economic and workforce development, and resilience.[1] The draft final Plan for Opportunity, released late 2013, outlines broad goals and also recommends specific actions for implementation. A prioritized implementation plan will be taken to the community and to regional leaders to keep momentum going.[2]



Much of the three-county study region lies within the FEMA 100-year floodplain, and additional properties are at risk of flooding during extreme storms.
Source: GRPC. Draft Plan for Opportunity. 2013.

Drivers for Addressing Water

Water is central to the Gulf Coast's economy, sustaining recreation, tourism, fishing, and energy production industries. But the region is also vulnerable to coastal flooding and damaging storms, and it has suffered in recent years from declining public perception of water quality, due largely to Hurricane Katrina's devastating effects in 2007 and the 2010 Horizon Deepwater oil spill. The area is also rapidly losing wetlands due to development along the coast, and impervious surfaces increased 58% between 1972 and 2000. A major challenge for the region — which the planning team decided to tackle — is ***how to foster an economy that is sustained by the water but not overly vulnerable to it?***

Integrating Water

Water is one of the seven key focus areas of the Plan, as mentioned above. GRPC commissioned a Water Subcommittee that completed a comprehensive regional assessment of water resources covering human uses, the water-dependent economy, natural resource extraction, water quality, and ecology and coastal vulnerability. The committee also conducted an extensive stakeholder engagement process focused specifically on water.[1]

These efforts led to the development of three overarching goals related to water: building a resilient economy, providing equitable infrastructure, and conserving the coastal environment. The committee also developed specific strategies to support these goals that can be implemented at the local or regional level. Sample strategies are listed below.[3]

Goal 1: Build a Resilient Economy

Strategy 1: Create a Waterfront Wayfinding Signage System.
Strategy 2: Organize an Eco-tourism Council
Strategy 3: Expand Public Access to Water Quality Information

Goal 2: Provide Equitable Infrastructure

Strategy 1: Enable Stormwater Revenue Streams
Strategy 2: Encourage the Gulf of Mexico Alliance to Coordinate Policies Among the States
Strategy 3: Expand the Digital Inventory of Water, Wastewater and Stormwater Infrastructure
Strategy 4: Encourage and Incentivize Development Codes

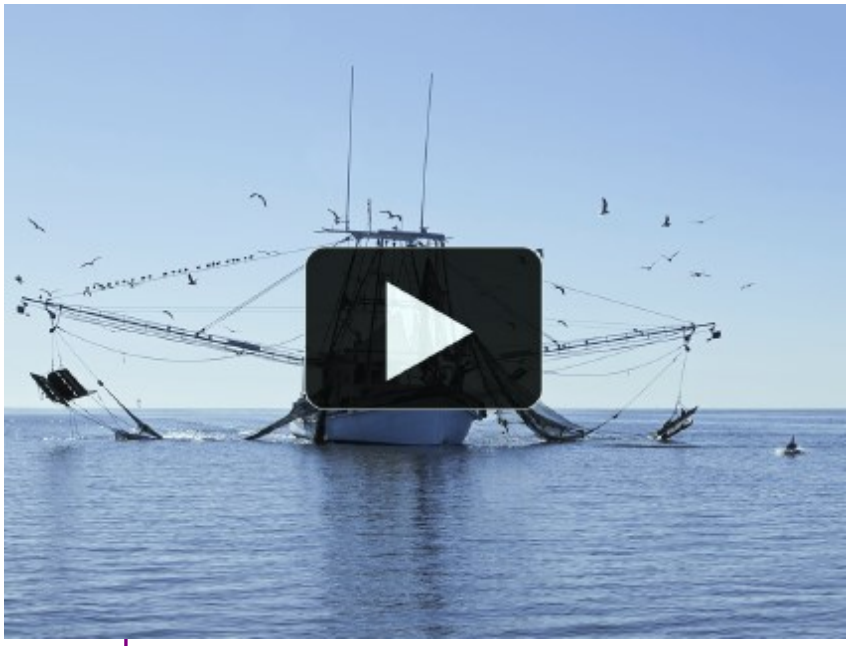
Strategy 5: Encourage Daylighting of Streams through Capital Improvement Planning

Goal 3: Conserve Coastal Environment

Strategy 1: Implement a Septic System Maintenance Verification System

Strategy 2: Add 12-digit Hydrologic Unit Code-defined Watersheds to Special Management Area Plans

All the recommendations can be found in the draft final plan.[3]



The Plan for Opportunity produced a series of short videos highlighting key themes. Above is the video on water resources. To view: http://vimeo.com/80076160; password Mississippi.

Overcoming Challenges

In the Gulf Coast region, many people are tired of talking about the risks of being in a flood zone or in a hurricane-prone area. These are hard conversations to have, and the Committee felt that many residents had begun to get fatigued. So, the team resolved to show what would be different about this plan compared to all the others; namely that even with all the planning going on, there had not been a *regional* approach to thinking about water. For example, stormwater is a huge issue on the coast but the region had never discussed taking a regional approach. Because of this unique and potentially more effective method, the team found that most people they sought to engage were receptive to the Plan for Opportunity process.[2]

Promising Practices

- The Water Committee made a great effort to frame the water conversation as being about the region's economic strength and resiliency. The team clearly articulated the ways in which the economy depends on a healthy water resource, and it also took every chance to bring water into conversations on other topic areas, such as economic development (let's think about water-based economic development, not just land-based) or transportation (how about the ways we get about on the water, or effects of the port on land-based transportation?).[2]
- Due to planning fatigue mentioned above, the stakeholder outreach component was both particularly challenging and especially important in the Plan for Opportunity, and extensive outreach was conducted for each topic area. The Water Committee talked to all the "usual suspects" such as water utilities and consumers, and they conducted the typical array of public meetings and community surveys. But they also made an effort to go out to the places where people interact with the water, such as fishing spots and beaches. This ended up being a very effective and rewarding approach, as people would share about the fish they just caught or the trash they saw littering the beach, which opened the door for deeper conversations. Community open houses held throughout the region at various stages of the planning process were also very helpful in giving real-time feedback on how effectively the team was framing the issues and enabling them to become more precise in their language.[2]
- Collectively, the seven topic area committees developed an initial list of more than 250 recommendations included in the draft plan. To hone in on the most effective of these, each committee is identifying their top 10 priority action steps to include in the implementation strategy, a challenging assignment but one that the planning team hopes will produce a workable action strategy.

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City of Pittsburgh

Pittsburgh, PA | 2010 Community Challenge | http://www.greenboulevardpgh.com

Revitalizing Pittsburgh's riverfront to enhance access and improve water quality

About the Green Boulevard Plan

The City of Pittsburgh received a 2010 Community Challenge grant to revitalize the Allegheny riverfront by establishing a walkable rail-with-trail green boulevard that accommodates existing Allegheny Valley Railroad freight with regional passenger rail use, as well as additional transportation infrastructure, stormwater management and riverfront habitat restoration.[1]

Vision of the Allegheny Riverfront Green Boulevard Plan.
Source: Perkins Eastman Associates courtesy of Riverlife. www.riverlifepgh.org

This project was led by the City's Urban Redevelopment Authority (URA) and Riverlife, a local nonprofit focused on reclaiming, restoring and promoting Pittsburgh's riverfronts.[2] Pittsburgh's new vision for the Allegheny riverfront will help continue the city's successful transformation from a once-thriving industrial mecca to the home of a vibrant, diversified economy based in technology, medicine, banking and finance. By incorporating riverfront park access, open space and more neighborhood-friendly designs, the plan will help improve not only the local economy but also water quality and the surrounding ecosystem.

Drivers for Addressing Water

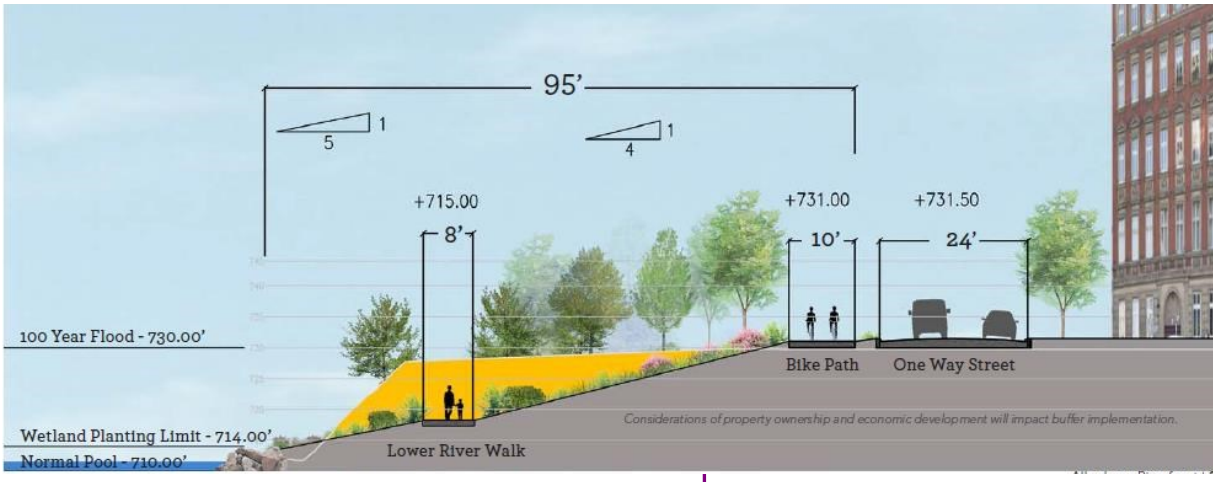
One of the Green Boulevard's many shining stars is its direct connection to the Allegheny riverfront. Strengthening this connection and making the riverfront accessible is a goal of the Green Boulevard Plan, not only to enhance the enjoyment of residents and visitors but also to help restore a sense of pride in the River and instill renewed environmental stewardship. The Plan emphasizes implementing sustainable and innovative practices geared toward improving local water quality. Several factors contribute to the need to improve water quality in and access to the River:[3]

- Large impervious industrial surface areas surrounding the riverfront contribute to high volumes of untreated stormwater flowing into the river system. This not only causes poor water quality but also contributes to localized flooding.
- Several stream systems have been buried over the years as part of urban development. Reconnecting stream systems with their natural hydrology can slow stormwater runoff and improve the surrounding ecosystem.
- Connecting the community with the riverfront through improved access will help beautify the area and educate the public about the river's ecological function and the importance of maintaining good water quality.

Integrating Water

The Plan's open space and riverfront access component includes several goals related to improving water infrastructure. These are: riverfront accessibility; recreational and regenerative landscapes; riverbank stabilization; and ecological enhancements.[1]

- ***Riverfront Accessibility.*** Through project surveys and community outreach meetings, community members emphasized their desire for increased access to the River. New access points would help connect existing trails.
- ***Recreational and Regenerative Landscapes.*** The Plan aims to create twenty-nine acres of new open space, which will provide recreational opportunities and also allow "soft" stormwater management.



Goals for riverfront stabilization along the Allegheny River in the dense urban development zone. Source: Green Boulevard Strategic Plan. March 2013.

- ***Riverbank Stabilization***. Restoring and stabilizing the riverbanks is important to improving water quality and maintaining a high functioning ecosystem. The Plan recommends riparian buffer zones that span across three land uses (urban development, mixed industrial and residential).
- ***Ecological Enhancements***. The Plan recognizes the importance of the surrounding ecosystem and it aims to implement strategies that expand urban tree canopy, enhance riparian buffers, and promote stormwater infrastructure, to name just a few.

Overcoming Challenges

Due to its surrounding mountainous topography and iconic triangular city center cut by three rivers (Monongahela, Allegheny and Ohio), Pittsburgh is naturally prone to eroding steep slopes and flooding. Additionally, like many urban centers, Pittsburgh has several industrial areas that now lay fallow and contain large impervious surfaces which can contribute to and accelerate flooding frequency and lead to poor water quality.

The Green Boulevard Plan has taken a holistic approach to "soften" and rehabilitate the once highly industrial sites to integrate environmentally friendly practices. The challenges vary widely and include everything from infiltration rates, private property rights and political will. The URA and Riverlife, among several other partners, worked in unison to conduct a comprehensive outreach process. This included many public and project level meetings.[3] These meetings have helped develop a more community-wide approach and acceptance to some of the proposed project ideas.

While the plan is complete, some challenges remain, such as property acquisition and project level financing. These are currently being addressed by the project team.

Promising Practices

- As a way to get residents and the business community more aware of the Green Boulevard Plan and to help inform how its projects were shaped, the planning team held events at local businesses along the Plan's intended implementation corridor. These included several trivia nights and a bike tour during Pittsburgh's Bike Week.[1] This outreach was effective in educating the community about the project itself and in bringing the community into the planning process.
- Riverlife and the City of Pittsburgh have been able to work with many businesses along the riverfront, such as The Rivers Casino, to incorporate green infrastructure practices into their property design.[3] While incorporating green infrastructure is not yet common practice for many businesses, advocates for the Green Boulevard Plan were able to show the increase in economic and environmental benefits to businesses by installing such practices. The Rivers Casino, among others, now usestheir beautifully-designed green infrastructure facilities as a way to attract customers to their business.

Riverfront trail along the Allegheny River. Source: Green Boulevard Strategic Plan. March 2013.

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3. Interview with the City of Pittsburgh Urban Redevelopment Authority and Riverlife. October 22, 2013.

City of Columbia

Columbia, TN | 2010 Community Challenge | www.columbiatn.com

Fostering community revitalization by developing sustainable practices for a busy transportation corridor

Rendering of James Campbell Boulevard streetscape transformation.
Source: James Campbell Boulevard 2050 Plan. 2013

About the James Campbell Boulevard 2050 Plan

As the economic and social center of the 13-county region of south central Tennessee, the City of Columbia was awarded a 2010 Community Challenge Grant in the amount of $250,000 to focus on the future of the James Campbell Corridor. The City matched that amount with an additional $100,000. Columbia is a city with a long history of growth and change. From its iconic downtown to its medical services hub at Maury Regional Hospital, the City is today considered the destination for many critical regional needs. Employment, healthcare, commerce, professional services, recreation, and strong neighborhoods are some of the many assets that Columbia offers the region.

Despite Columbia's importance and prominence in the area, the USDA classifies Columbia as an economically-distressed micro-urban area. With support from the Sustainable Communities grant, the City drafted *The Boulevard 2050 and Tomorrow Plan*. This plan incorporated various partner and stakeholder interviews to develop a robust roadmap for the future of a major transportation and business corridor. It addresses economic growth, aesthetics, and environmental issues such as stormwater.[1]

Drivers for Addressing Water[2]

Stormwater and its cause — excess impervious surfaces in the form of parking and other large lots — is specifically addressed in the plan. More broadly, sustaining good water quality is a major goal of the City due to several key factors:

- Storm events cause periodic flash flooding due to the City's topography. This flooding is exacerbated by the area's hardened steep slopes and large impervious areas, such as parking lots that fall on either side of the James Campbell Corridor.
- High quality drinking water is vital for any community. The Duck River, a high-functioning and biologically diverse river, is the City's source for drinking water. Columbia recognizes the importance of ensuring its protection.
- Currently, there are no trails that connect the riverine system with the community. Connecting the community with the local river through a system of trails will not only help beautify the Corridor, but it will also showcase the importance of protecting water quality.

Integrating Water[2]

The Plan identifies seven major issues that drove its creation. Issue two specifically calls out stormwater overflow and its contributing factor of too much impervious surface. The City's recent history of flash floods indicates that existing stormwater infrastructure does not have the capacity to mitigate the rainfall running from ever-expanding impervious surface areas. The Plan identifies two actions to improve this condition: infrastructure must be expanded or modified and more natural "softscapes" or "greenery" should be considered. To implement these goals, the Plan puts forth a toolkit of nine actions that should be considered when implementing development projects:

- Maintain and repair hydrological patterns
- Enable natural infiltration
- Choose more permeable paving options
- Incorporate rain gardens and bio-retention swales

- Green streets
- Harvest rainwater to reduce the amount of stormwater flow
- Recycle grey water
- Encourage the planting of shade trees on both residential and commercial lots
- Embrace green roofs and their ability to reduce stormwater flow

Overcoming Challeneges

The City of Columbia has just recently begun implementing its new stormwater permit requirements. To meet requirements, the City hired a stormwater coordinator to help prioritize projects and make sure Columbia meets state and federal standards. While this has put the City on track to meet its stormwater obligations, the program is new and still needs time to grow.

Budgeting and paying for capital stormwater projects within the City has historically been difficult. Legislation to create a stormwater fee has failed to pass on three separate occasions. While the stakeholders and community members who helped inform this Plan felt that addressing stormwater is very important, projects are hard to implement without a dedicated source of revenue. Plan developers hope it will better integrate stormwater projects into the new designs of the James Campbell Corridor and ultimately help defray the cost of the stormwater components.

Source: James Campbell Boulevard 2050 Plan. 2013

Promising Practices

- The City embarked on a fact-finding and discovery process through a series of interviews and community events that relied on community members and other stakeholders for their input on how the James Campbell Corridor should be revitalized. Residents specifically noted flash flooding and stormwater issues and also expressed that the corridor has very little landscaping or greenery. Gaining such input from community members is important to the overall success of incorporating stormwater projects into the redesign of the corridor.[1]
- The James Campbell Plan incorporates the relatively new concept of "Light Imprint Design." Developed by Duany Plater Zyberk and Company, Light Imprint (LI) "is a planning and development strategy that emphasizes sustainability, pedestrian-oriented design and increased and environmental infrastructure efficiency while reducing a communities' anticipated construction expenses."[3] Given the large amounts of impervious surfaces throughout the City of Columbia, this concept represents a more sustainable approach to water quality management while the City continues to grow.
- Columbia recognizes the need to reconnect the original hydrologic patterns of the City's waterways in order to enhance water quality and control runoff from storm events. The James Campbell Plan states that this is necessary in order to create a more sustainable and livable community.[1] Related strategies outlined in the Plan, such as installing green streets and rain gardens, will further advance the City's goal to more efficiently and effectively manage its water resources.

Natural zone sequence depicting the most natural area (top) moving to a rural natural zone (middle) to a more sub-urban area (bottom). According to the Plan, "each sequence addresses elements such as density, plantings, setbacks, building heights, signage, lighting, and thoroughfare design."
Source: James Campbell Boulevard 2050 Plan, page 48. 2013.

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East Tennessee

Knoxville, TN | 2010 Regional Planning | http://www.planeasttn.org/About.aspx

Illustrating the promise of low-impact development for a region

About PlanET

Plan East Tennessee (PlanET) is a regional partnership of communities throughout a five-county region working to develop shared long-term solutions for investments in the region. Focus areas for planning include workforce and economic development, housing and neighborhoods, transportation and infrastructure, environment, and healthy communities.[1]

This project started with an Analysis of Existing Conditions, which presented a snapshot of conditions affecting livability in the region, in order to provide a baseline against which to measure improvement in each area including regional water quality and water infrastructure. Beginning in 2012, PlanET began producing annual Livability Report Cards to track progress toward achieving implementation goals identified at the end of the planning process.

REGIONAL LIVABILITY REPORT CARD

The Report Card summarizes ratings for all of the focus area trends/issues sections found on pages 8 – 39 of the PlanET Livability Report. It provides a brief overview of the region's strengths and areas that need improvement. Ratings are based on overall regional statistics and not how a particular community or county performs in a given area.

Trends/Issues	★ REGIONAL STRENGTH	✚ IN GOOD SHAPE: CONTINUE TO IMPROVE	◆ CAUTION: NEEDS IMPROVEMENT	⚑ REGIONAL WEAKNESS; NEEDS ATTENTION
Economy				
Economic Engines	★			
Employment Levels		✚		
Workers			◆	
Jobs				⚑
Transportation & Infrastructure				
Regional Commutes & Highway Congestion	★			
Transportation Costs				⚑
Alternatives to Automobile Transportation			◆	
Air Travel			◆	
Infrastructure & Development		✚		
Housing & Neighborhoods				
Housing Values, Sales, & Rentals		✚		
Housing Tenure		✚		
Housing Affordability	★			
Healthy Communities				
Rates of Disease/Illness				⚑
Health Insurance			◆	
Access to Medical Services & Healthy Foods		✚		
Crime		✚		
Environment				
Air Quality				⚑
Water Quality			◆	
Agriculture				⚑
Parks, Recreation, & Tourism	★			

PlanET produces easy-to-understand "report cards" each year to measure progress toward goals identified in the regional plan.
Source: PlanET. April 2013. Plan East Tennessee Livability Report Card.

Drivers for Including Water

Water is a defining part of East Tennessee's landscape, identity and culture. The region's reservoirs, lakes and rivers support a robust tourism industry and contribute to a high quality of life that is a major factor behind the area's steady population growth.

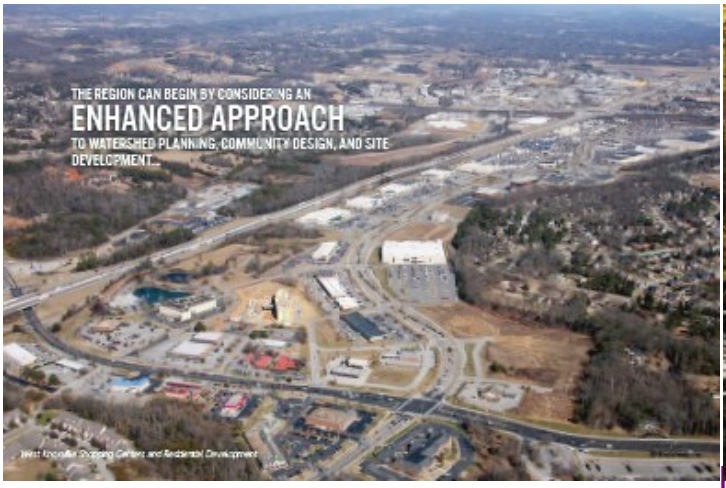
At the start of the PlanET project, the team conducted community interviews to find out which issues residents cared most about, and water quickly rose to the top of the list. Residents recognize that water resources are important to the region socially and economically but that these resources are also vulnerable to degradation, especially because of the region's aging water infrastructure, insufficient stormwater management system, historically sprawling land use pattern, and high rate of expected population growth.[2]

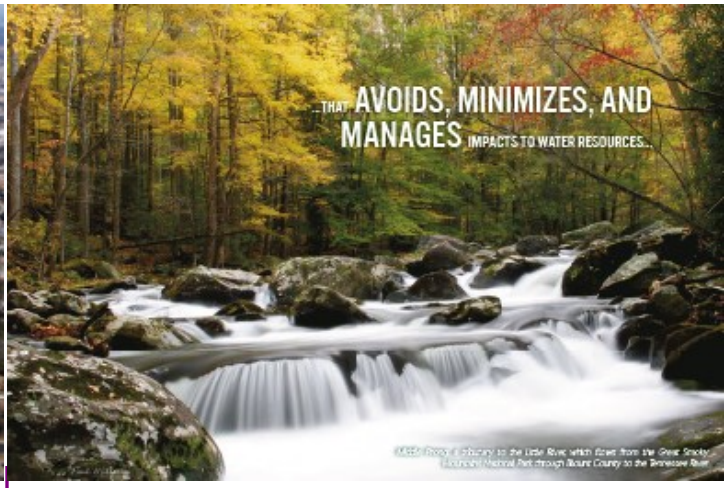
Integrating Water

Cover of the LID guide.
Source: University of Tennessee Knoxville Landscape Architecture Program. 2013. Low Impact Development Opportunities for the PlanET Region. http://www.planeasttn.org/GrowStronger/DemonstrationProjects/LowImpactDevelopment.aspx

Because of the high public concern about water resources, it was an easy decision to include this as a central element of the plan. Water is woven throughout the PlanET planning process and documents, with assessments and goals covering water quality, source water supplies, water infrastructure, and regional watershed management. But water takes center stage in the showcase publication, *Low Impact Development Opportunities for the PlanET Region*. Produced by students and faculty at University of Tennessee's Landscape Architecture Program, this well-illustrated guide is intended to be a primer on low impact development (LID) and how it can be applied in the region.

The project started with an investigation by students in a studio class into how LID can be applied both as a method for managing water onsite as well as an overarching principle for guiding development on a landscape scale, a crucial issue in a region expecting 43% population growth over the next 30 years. The students' preliminary report was received enthusiastically by the PlanET consortium, which identified funding to commission the full report.[2]





Source: University of Tennessee Knoxville Landscape Architecture Program. 2013. Low Impact Development Opportunities for the PlanET Region.

The guide begins with an overview of the state of the region's shared water resources and the impacts of development on watersheds. It then describes LID as an alternative approach and profiles a range of structural LID facilities from rain gardens to bioretention cells, illustrating the function, construction considerations, appearance, benefits, costs, and maintenance requirements of each. It provides considerations for selecting the most suitable set of techniques for a particular site or watershed. The final section of the guide features successful LID projects in the PlanET region or elsewhere in Tennessee, ranging from individual residential sites to large-scale plazas and parks.

The guide is being distributed to all PlanET consortium partners, as well as to institutions such as schools and libraries. The next step for the PlanET team is to build support for implementing the guide's recommendations, which it plans to do by presenting findings to local governments, engineering departments, developers and landowners throughout the region.[2]

Overcoming Challenges

While there were no major hurdles in developing the guide, a key challenge moving forward will be to translate recommendations into action in communities throughout the region. The PlanET team recognizes that not all town development codes allow LID principles and practices, so assistance will need to be provided in order to overcome this basic hurdle.[2]

Promising Practices

A key promising practice from the PlanET experience was leveraging a local professional design program as a resource to augment the grant work. This kind of partnership with planning, civil engineering, landscape architecture, or other academic programs is low-risk and potentially high-reward, opening up a wealth of information and resources. Not only can such a relationship add great value to the planning process, but it may also help forge valuable new relationships and conversations that can continue, as is the case in East Tennessee.

Source: University of Tennessee Knoxville Landscape Architecture Program. 2013. Low Impact Development Opportunities for the PlanET Region.

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Shelby County Government

Memphis, TN | 2011 Regional Planning | www.midsouthgreenprint.org/

Mapping a region's green spaces to enhance water quality and improve livability

Worthington Park, West Memphis, AR. Source: Mid-South Regional Greenprint Vision Plan. 2013.

About Mid-South Regional Greenprint

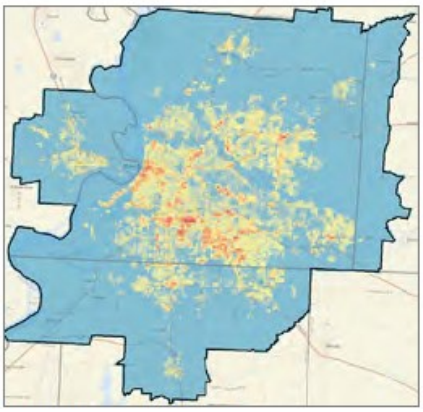
In November 2011, Shelby County Government was awarded a Sustainable Communities Regional Planning Grant in the amount of $2,619,999 for the Mid-South Regional Greenprint & Sustainability Plan. The plan is designed to enhance regional livability and sustainability by establishing a unified vision for a region-wide network of green space areas, or Greenprint, which addresses long-term housing and land use, resource conservation, environmental protection, accessibility, community health and wellness, transportation alternatives, economic development, neighborhood engagement, and social equity in the Greater Memphis Area.[1]

The regional Greenprint includes parks, greenways, bike trails and walking paths, byways, blueways, conservation lands, natural areas, wildlife management areas, open space areas, community gardens, stormwater management areas, and other similar spaces. The scope of this plan is defined geographically by the boundaries of the Memphis Metropolitan Planning Organization (MPO) and West Memphis MPO, including jurisdictions in Tennessee, Mississippi, and Arkansas.

Drivers for Addressing Water

By expanding green space to enhance livability in the region, the project inevitably deals with water issues such as surface and groundwater quality and protection as well as stormwater overflow across the landscape. The drive to address these issues was inspired by several factors:

- Much of the region's drinking water comes from underground aquifers. Due to the high quality of these aquifers, there is minimal treatment required which in turn results in low costs to the customers. At the same time, because the water source is invisible, there is not a great emphasis on protecting recharge zones.[2]
- Surface water quality conservation and protection does not necessarily resonate with the citizens in the region due, in part, by the high quality of the region's aquifer-based drinking water. To that end, Greenprint helps to address the importance of maintaining high quality streams and rivers by educating local residents.[2]
- Despite the high quality of drinking water, some rivers in the region have poor enough water quality to have been classified as "impaired waters" according to section 303(d) of the Clean Water Act.
- Several parts of the region are or were once high-use industrial areas which in some cases has resulted in poor water quality. This is the case in North Memphis.
- The City of Memphis' newly revised Municipal Separate Storm Sewer System (MS4) permit requires additional treatment of stormwater. Planners felt that it was important for the Mid-South Greenprint help to address these issues.



Map showing impervious surface (yellow, orange and red highlights) in the Mid-South regional planning zone (outlined in blue). Source: Mid-South Regional Greenprint Vision Plan. 2013.

Bio-rention (rain garden) installation.
Source: Mid-South Regional Greenprint Vision Plan. 2013

Integrating Water

In the plan's vision statement, the category "improved environmental quality" encompasses goals such as ensuring access to clean drinking water, improving water quality in lakes and rivers, and more innovatively managing stormwater.[3] In a series of sustainability and livability indicators, the plan identifies impervious surface and undeveloped land in floodplains as two of several causes of poor water quality if not addressed. The plan includes strategies — both traditional and more innovative — that can help address these water quality concerns.

Overcoming Challenges

Like many regions around the country, the built environment in the Mid-South region interferes with, and in some cases dramatically degrades, local water quality. By implementing the Greenprint and Sustainability Plan, the Mid-South region is beginning to overcome water quality challenges by re-connecting the community to its natural landscape, including rivers and lakes.

A particular challenge for the region is a lack of environmentally-focused nonprofit organizations, which has often left the heavy lifting of water quality protection up to local governments. Through its Sustainable Communities grant, the Mid-South Greenprint has built a tremendous partnership among public and private organizations that are focusing on the importance of protecting and maintaining good water quality.

Promising Practices

- By mapping the region's green hubs and corridors, the Greenprint has brought greater focus to rivers and streams in the greater Memphis area. This creates an opportunity to take a watershed approach to water quality enhancement, and it also helps highlight the vital interconnectedness of the region's waterways.
- Approximately one-third of the Regional Planning grant was allocated for localized planning efforts that help to meet the vision and goals of the Mid-South Regional Greenprint Plan.[3] Twenty proposals from local organizations and their partners have been approved by the regional planning agency. These grants are providing vital funding for local governments to accomplish sustainable projects, and they are helping accelerate the region's long-term goals.
- The City of Memphis currently collects a stormwater fee from residents to help cover the cost of stormwater management. The Greenprint is helping to identify ways to more efficiently use this revenue to implement effective stormwater management and green infrastructure practices.
- The Memphis and Shelby County Office of Sustainability is holding a low impact development (LID) design competition and workshop to help spread the word on the importance of enhancing and protecting water quality. This will be especially helpful in a region that does not have many established watershed organizations to conduct such education.

Source: Mid-South Regional Greenprint Vision Plan. 2013.

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Capital Area Regional Planning Council

Madison, WI | 2010 Regional Planning | http://www.capitalregionscrpg.org/

Showcasing effective stormwater Best Management Practices (BMPs) in planned high-density developments

About Capital Region Sustainable Communities (CRSC)

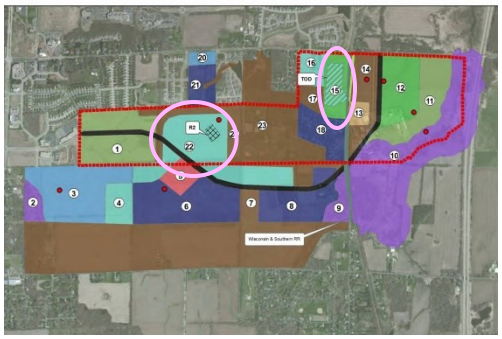
Dane County is located in south-central Wisconsin, covering 1,200 square miles and including 34 townships, 7 cities, and 19 villages with a population of over 475,000.[1] When the Capital Area Regional Planning Council received a Sustainable Communities Regional Planning grant in 2010, the region already had a comprehensive land use and development policy guides in place: *Vision 2020: Dane County Land Use and Transportation Plan*. The plan lays out development zones for the region with varying degrees of development intensity, ranging from Urban Service Areas which provide a full range of urban services to Open Space Corridors designed to protect sensitive natural areas. The Capital Region Sustainable Communities (CRSC) project was launched to complement and advance *Vision 2020* by:

- Developing Future Urban Development Area to map out sustainable growth in the region
- Closing gaps in *Vision 2020* and local plans, especially around equity, growth management, and greenhouse gas emissions
- Preparing regional transit and development corridor plans
- Showcasing sustainable development through a series of catalytic demonstration projects
- Establishing sustainability indicators to measure progress and developing a partnership to collaborate on shared goals[3]

CRSC is poised to transition beyond the end of the grant period, with many projects already moving into implementation. The project strategically included a mix of projects that brought together municipalities, agencies, and other actors in a synergistic way that allowed projects to tie into each other and into the regional plan. As a result, consortium members have a stake in implementation and in many cases are taking initiative to move in that direction.[4]

Drivers for Addressing Water

Water comes naturally to the Capital Area Regional Planning Commission, the agency coordinating CRSC. For more than 40 years, regional water quality has been the driving force behind regional collaboration in the County, which includes many streams and lakes covering nearly 21,000 acres.[1] The region is a stream headwaters area, and with most of the larger lakefronts already developed, areas available for growth are in the watersheds of small streams, which are more vulnerable to degradation.



The Stormwater Catalytic Project modeled stormwater management plans for two blocks (circled) within the McGaw Neighborhood Area plan in the City of Fitchburg, WI. These blocks are slated for medium- to high-density development.
Source: Emmons & Oliver Resources Inc. 2012. Catalytic Project: No Increase in Post Development Run-Off Volume – City of Fitchburg, WI. http://danedocs.countyofdane.com/webdocs/PDF/

To mitigate the impact of new development on sensitive streams, the County has adopted advanced water quality standards, including an ambitious goal for new development to capture 100% of rainwater onsite, resulting in *no increase* in stormwater runoff from pre-development conditions. However, the future development plans developed through the CRSC process simultaneously recommend higher-density development wherever feasible and supported by the market. This left the project team with a critical question: ***Is it possible to maintain pre-development hydrology in high-density developments?*** Thus the idea for the Stormwater Catalytic Project was born. The team would test this question on the ground.

Integrating Water

Dane County's stormwater management standard requires a minimum of 90% of stormwater to be treated onsite, but CAPRC's technical advisory committee has recommended that communities aim to achieve 100% stormwater capture – a standard that several communities have indeed adopted on their own, including the City of Fitchburg, a suburb of Madison with a population of 25,000 and one of the areas targeted for future growth. Because Fitchburg had committed to a 100% stormwater standard and to accommodating higher-density development, it was an excellent candidate for the Stormwater Catalytic Project.[1]

The project's goal was to test whether it is possible to achieve no increase from pre-development stormwater runoff in a high-density development. To be successful, post development runoff

Capital Area Regional Planning Council (continued)

volumes would need to be equal to or less than pre-development runoff volumes for the one- and five-year average rainfall periods.[2]

Fitchburg and CARPC contracted with the consulting firm Emmons & Oliver Resources Inc to conduct the project. The team chose two hypothetical blocks in the McGaw neighborhood area: one medium-density and another a high-density transit-oriented development. Preliminary steps included reviewing the McGaw neighborhood plan and local regulations to develop realistic land use scenarios, as well as researching current literature on stormwater volume control. Emmons then modeled several management scenarios for the parcels in order to develop plans that met or exceeded the standard. The draft plans were brought to the community at a design charrette, where local residents and development professionals helped formulate final proposed management plans.

Volume control BMPs modeled for the high-density TOD stormwater management plan included rainwater harvesting (above left), below-ground recharge systems (above), and green roofs (left).
Source: Emmons & Oliver Resources Inc. 2012. Catalytic Project: No Increase in Post Development Run-Off Volume – City of Fitchburg, WI.

The project demonstrated that ***it is possible to achieve no increase in pre-development runoff volume on high-density parcels by applying a distributed approach to stormwater management.*** This approach uses various BMPs throughout the site, including in the roadways as well as underground, to capture rainwater close to the source. According to the final report, this method "achieves volume control, but does not encroach on developable area"[3] — an important finding for communities in the county that are already largely developed and expecting additional growth. To help such towns replicate the project's results, the final report includes stormwater guidelines and templates.[4]

Overcoming Challenges

- Historically, water quality protection has been a controversial issue in Dane County. If ambitious stormwater controls were to be embraced by economic development advocates, the CRSC team knew it would be important to test the standard's feasibility. While the Stormwater Catalytic Project demonstrated that stricter standards can be effective without encroaching on a parcel's developable area, more research is needed to determine whether the additional benefits outweigh the costs.[1]
- Towns expressed some hesitancy to participate in the study, due to the concern that if stricter stormwater standards were proven to be feasible, they would then become *required*. Conversely, conservation interests felt that a successful result might open to development lands that were previously considered too sensitive. Two factors were key to overcoming these concerns: (1) building a trusting, collaborative relationship between the project team and the City of Fitchburg and (2) narrowing the scope of the project to a very technical analysis (see below). The end result was that the study provided information that both Fitchburg and CAPRC are finding valuable in order to evaluate projects and to inform policy decisions.

Promising Practices

- Critical to the project's success was collaboration between technical staff at the City of Fitchburg and CARPC to clarify the project in a technical, straightforward way so that it was clear this was a fact-finding project rather than an attempt to impose stricter standards on other towns in the county.[4]
- CAPRC felt that the Sustainable Communities grant played a key role by providing seed money for developing a regional approach to stormwater management, as previous projects had focused on small-scale, local problems. Conducted through the avenue of the regional planning grant, the catalytic project automatically had broad regional application.[4]

References

1. Capital Area Regional Planning Commission. 2010. Regional Profile. http://danedocs.countyofdane.com/webdocs/PDF/capd/2010_postings/CARPC_Regional_Profile.pdf

2. Emmons & Oliver Resources Inc. 2012. Catalytic Project: No Increase in Post Development Run-Off Volume – City of Fitchburg, WI. http://danedocs.countyofdane.com/webdocs/PDF/capd/2013_postings/Publications/ModelingReport_FINAL_web.pdf

3. Capital Region Sustainable Communities website. http://www.capitalregionscrpg.org/

4. Interview with Kamran Mesbah Deputy Director and Director of Environmental Resources Planning, Capital Area Regional Planning Commission. October 22, 2013.