A Roadmap for Green Infrastructure

Creating a vision for a connected system of green infrastructure in Southwestern Illinois.

HEARTLANDS CONSERVANCY
Investing In The Nature Of Southwestern Illinois
Growing the Network

Close to 100 attendees came to the first annual Green Infrastructure Breakfast on May 16, 2013 in Collinsville. The variety of attendees, including community leaders, elected officials, and businesses, showed the interest in achieving the vision of a regionally connected system of green infrastructure.
A Roadmap....

What is a roadmap? It is a guide. It provides us direction. And hopefully in the end, a roadmap gets us to where we want to go.

‘A Roadmap for Green Infrastructure’ will act as a guide and provide direction in getting us to where we want to go as a region in valuing our natural resources and treating them as an asset that we need to plan for and invest in.

We love Southwestern Illinois. The beauty of the bluffs overlooking the Mississippi River, the rolling farmland that provides the bountiful harvest that feeds us and the world, the quietness of our woods on a snowy winter morning, the scent of spring as dogwoods and redbuds pop to life. Southwestern Illinois is a great place to live, raise a family, and have a business. We have a great quality of life.

We also are positioned to prosper economically as our region leverages our central location, multi-modal transportation network, and other strengths. With growth, however, comes certain challenges. The question becomes: How do we meet those challenges, increase our quality of life, and retain the qualities of Southwestern Illinois that we treasure.

The answer lies with treating our natural resources as an investment. We realize the importance of our grey infrastructure, we must treat our green infrastructure (our natural resources) in the same way.

This document does not have all the answers. Instead it is meant to act as starting point on the road to realizing a green infrastructure vision for Southwestern Illinois. Like most journeys, there have been successful trips already taken. We hope to leverage not only our past work, but the work of other partners, communities, and agencies. By working together, we can realize a shared vision. A vision of a connected system of green infrastructure in Southwestern Illinois.
What is Green Infrastructure?

Our Green Infrastructure is all around us.

It is our parks, open space, woodlands, prairies, wetlands, gardens, agricultural lands, and trees.

*Simply, it is our region’s natural resources.*

A connected system of green infrastructure is extremely valuable at a regional level. Benefits of a regionally connected system of green infrastructure include: greater biodiversity or plants and animals, healthier ecosystems, infiltration of stormwater, removal of non-point source pollution, cleaner water, opportunities for recreation, and a higher quality of life.

Green infrastructure is both noun and a verb. As a noun, green infrastructure is synonymous with familiar terms such as “natural resources”. As a verb, green infrastructure refers to mimicking natural processes, especially mimicking the natural process of dealing with stormwater. For example, instead of rainfall running off of impervious surfaces such as parking lots into storm sewers, green infrastructure can be used to infiltrate storm water and mimic natural drainage conditions.

Of all the concepts and principles presented in this document, the most important is the idea of *connectivity*. Connecting our natural resources at a regional, community, and site scale ensures maximum benefits and functionality.
Wetlands

Native Plants

Prairies

Parks

Open Space

Ag Lands

Rivers and Streams

Trees

Woodlands
Why use the term ‘Green Infrastructure’?

Why refer to it as ‘Green Infrastructure’? The answer is that it helps us look at our natural resources as an investment, especially at a regional scale.

This document, ‘A Roadmap for Green Infrastructure’, is a guide for action. Green infrastructure must be planned for in the same way we value planning for our transportation (grey) infrastructure. Most of us realize the importance of our transportation infrastructure to our everyday lives. It gets us to school and to work. It is critical to our economy in moving goods and services. Because it is so important, we ensure that our transportation is a connected system, we regularly plan for it, and we invest and value it as a resource. Imagine an interstate with no on or off ramps and thus no connectivity. The interstate would be useless without being connected to roads, population centers, and economic hubs.

We must give the same attention to our green infrastructure. A connected system of our natural resources provides the greatest value. We must ensure that our green infrastructure is connected, planned, and valued.

To help understand the components and benefits of green infrastructure, we have used the following categories: ecological assets, water resources, recreational assets, and agricultural lands. These categories are not mutually exclusive. In fact, there is significant overlap between them. But by simplifying the categories, we can better understand the components and interactions in a green infrastructure network.
A Connected System of Green Infrastructure

A network of green infrastructure includes:

- **Core** areas which are the heart of the network. Core areas are essential areas for habitat and wildlife.

- **Hubs** are large, unfragmented areas of woodlands, wetlands, streams, and other natural areas.

- **Corridors** connect the large core and hub areas. Corridors are sometimes referred to as “greenways”.

This interconnected system of natural resources provides greater value than fragmented areas.

Why Show A Highway?

We realized the importance of our connected transportation infrastructure. It gets us to school and to work. It is critical to our economy in moving goods and services.

Because it is so important, we ensure that our transportation is a connected system, we regularly plan for it, and we invest and value it as a resource. Imagine an interstate without connectivity with no on (or off) ramps. The interstate would be useless without being connected to other roads, population centers, and economic hubs.

We must give the same attention to our green infrastructure to ensure that it is connected. We must ensure that our green infrastructure is connected, planned, functional, and valued.
The Need for Green Infrastructure

On April 18, 2013 over 4” of rain fell in the area near Scott Air Force Base causing localized flooding and closure of roads. Solutions to flooding take multiple approaches, but green infrastructure will need to be a key strategy in the future, especially as future funding for grey infrastructure becomes tighter. The Wall Street Journal reported in February, 2013 that there will be a shortfall of more than $900 billion in needed grey infrastructure in the United States through the year 2020.

Flooding is one example of a regional problem that investments in green infrastructure can help mitigate. Green infrastructure can also help address other regional issues including: decreased water quality, loss of habitat, loss of biodiversity, and decreased air quality.
.....the Benefits of Green Infrastructure

A World Class Quality of Life

Clean, Safe, Supplies of Water

Healthy and Vibrant Habitats

Increased Biodiversity

Photo Credit: Air Force photo/Karen Huston
Our Ecological Assets
Our ecological assets are the heart and soul of the green infrastructure network. A connected system of woodland, prairies, wetlands, and other habitats provide opportunities for native plant and animal species to live and thrive. These core areas and connections allow for greater diversity of species and healthier ecosystems.

A connected green infrastructure system provides greater ecosystem service benefits such as improved air and water quality, removal of pollutants, and infiltration of stormwater.

“A connected system of Green Infrastructure increases biodiversity and the health of our habitats”
Our Water Resources
Our water resources - including lakes, streams, ponds, rivers, and wetlands - are valuable green infrastructure. For stormwater at a regional scale, green infrastructure allows rain water to infiltrate into the ground instead of running off and contributing to localized flooding.

At neighborhood and site scales, green infrastructure strategies mimic natural processes that can reduce the need and costs for certain grey infrastructure. Green infrastructure improves our water quality by removing pollutants and sediments.

“Imagine clean water where our kids can splash and play.”
Our Recreational Assets
A connected green infrastructure system provides not only ecological benefits, but also great opportunities for recreation. Parks, greenways, open space, and trails provide passive and active recreation choices from riding a bike down a wooded greenway trail, to enjoying our lakes and streams, to just enjoying the shade of an oak tree. Recreational opportunities contribute to regional economic vitality by creating a higher quality of life.

“Recreational opportunities, created by a connected Green Infrastructure network, contribute to regional economic vitality.”
Our Agricultural Lands
Our agricultural resources are an important part of our economy, culture, and history. Southwestern Illinois farmers help feed the world by growing soybeans, corn, and wheat headed for international markets and produce headed for the local farmer’s market.

Many of our farms and agricultural lands have been passed down through generations of families. A connected Green Infrastructure network assists in keeping prime farmland connected and viable.

“A connected Green Infrastructure network assists in keeping prime farmland connected and viable.”
Principles of Green Infrastructure at Multiple Scales

Green infrastructure is scalable. To achieve a truly connected system, we must have strategies for green infrastructure at regional, community, and site scales. Many of the principles of green infrastructure are the same whatever the scale. A key principle at all scales is connectivity. A connected system of our natural resources has the largest benefit and impact.

Green infrastructure is both noun and a verb. As a noun, green infrastructure is synonymous with familiar terms such as “natural resources”. As a verb, green infrastructure refers to mimicking natural processes, especially mimicking the natural process of dealing with storm water. For example, instead of rainfall running off of impervious surfaces such as parking lots into storm sewers, green infrastructure can be used to infiltrate the storm water and mimic natural drainage conditions.

At a regional scale, the strategy for green infrastructure should be about retaining and expanding our existing natural resources such as woodlands, wetlands, and prairies. Unfragmented, continuous areas of 500 acres should be the minimum goal. Larger is better. Large, unfragmented areas should be buffered and linked together through corridors (greenways).

At a community level, we often think of conservation as needing to happen “somewhere else”, such as “out in the wilderness”. The community level, however, is where green infrastructure can have the greatest impact and benefit. In growing communities, conserving necessary park and open space before development occurs should be a priority. The green infrastructure network can be an integral part of a community's parks and recreation system - it adds to the total acreage of parks. Corridors (greenways) are one of the most effective strategies a community can use to maximize green infrastructure while providing development opportunities. Where development or re-development does occur, strategies such as low-impact development that mimic natural processes should be implemented.

At the site scale, mimicking natural processes is the key principle. Usually, a site has already been developed or is planned to be developed. At the site level, the principle of conservation means trying to conserve existing natural resources on site such as existing trees. Low-impact development that mimic natural processes such as raingardens and native vegetation should be used. Finally, the site should connect to the overall green infrastructure network. If adjacent sites incorporate green infrastructure principles, sufficient scale will soon be achieved.
Regional

Community

Site
Regional

At a regional scale, the strategy for green infrastructure should be about retaining and expanding our unfragmented natural resources such as woodlands, wetlands, and prairies. Unfragmented, continuous areas of 500 acres should be the minimum goal. Larger is always better. Corridors should be provided when it isn’t possible to keep large, unfragmented tracts.

1. Protect existing open space and natural areas.
2. Conserve lands toward assembling large blocks of high quality natural areas.
3. Connect large tracts of natural areas through corridors.

(Picture: Mascoutah High School students volunteering at stewardship by removing invasive species at Knobloch Woods Nature Preserve in St. Clair County.)
GUIDING PRINCIPLES
Regional Green Infrastructure

1. **Protect** existing public and private open space and natural areas.

2. **Conserve** additional lands to assemble high quality natural areas of sufficient scale (large blocks).

3. **Connect** large blocks of natural areas with corridors.

4. **Stewardship** of protected lands and natural areas.

A large tracts of woodland along the Kaskaskia River. Illinois’ largest block of contiguous forest is located along the Kaskaskia River. The 7,000 acre floodplain forest and postoak flatwoods is over two miles wide in places.
Community

At a community level, we often think of conservation as needing to happen “somewhere else”, such as “out in the wilderness”. At a community level, however, is where green infrastructure can have the greatest impact and benefit. In growing communities, conserving necessary park and open space in front of future development should be a priority. Corridors (greenways) are one of the most effective strategies at a community level. When development or re-development does occur, strategies such as low-impact development that mimic natural processes.

1. Protect existing parks and open space.

2. Conserve open space in areas of new growth.

3. Connect parks and open space with greenways.

4. Mimic natural processes, like this rain infiltration basin, where development does occur.
GUIDING PRINCIPLES
Community Green Infrastructure

1. **Protect** existing community parks and open space.

2. **Conserve** open space in areas of growth.

3. **Connect** community parks and open space through corridors and greenways.

4. **Mimic natural processes** where development does occur.

5. **Stewardship** of community parks, open space, and natural processes.

Trails within a greenway are a perfect way to connect green infrastructure assets in a community. Greenways are corridors that provide key linkages for trail users, wildlife and vegetation.

(Picture: Richland Creek Greenway in Belleville)
At the site scale, mimicking natural processes is the key principle. Usually, a site has already been developed or is planned to be developed. At the site level, the principle of conservation means trying to conserve existing natural resources on site such as existing trees. Finally, the site should connect to the overall green infrastructure network. If adjacent sites incorporate green infrastructure principles, soon sufficient scale will be achieved.

1. Conserve existing natural resources (existing trees, vegetation, etc) on a site where possible.

2. Mimic natural processes such as rainfall infiltration and using native plants.

3. Can only one site make a difference?

A few neighbors that can lead to...

A few blocks that can lead to...

... a connected Green Infrastructure network.
GUIDING PRINCIPLES
Site Green Infrastructure

1. *Conserve* existing site natural resources.

2. *Mimic natural processes*, especially landscaping and stormwater management. Restore lost or damaged ecosystem services.

3. *Connect* to the larger green infrastructure network.

4. *Stewardship* of the site.
What Comes Next?

How Do We Move Forward Toward a Vision of a Connected System of Green Infrastructure?

This roadmap is meant to be a guide. It is meant to help explain the terminology of green infrastructure and to lay out a framework that will help move the concept of a regionally connected system of green infrastructure toward reality.

Part of the framework is recommended areas for future action. We have listened to stakeholders, experts, the public, and our partners to develop four areas for future action: awareness and advocacy, data and planning, policy, and implementation.

The list of future actions is by no means inclusive. Nor is it static. We hope the list is a starting point for continued discussion. We are fortunate that there are already multiple partners in our region involved with making a green infrastructure vision a reality.

Awareness, good data and plans, and supportive policy will lead to the implementation of a connected system of green infrastructure. Every day there are new success stories of green infrastructure being implemented. We need to add to these successes and grow our connected system of natural resources.

Areas for Future Action

A. Awareness, Education, and Advocacy

B. Data and Planning

C. Policy

D. Implementation
A. The Need for Awareness, Education, and Advocacy

While the concept is not new, the term ‘green infrastructure’, is somewhat new. Awareness and advocacy will be needed to increase the understanding and implementation of green infrastructure. Initial actions include:

Form Regional Advisory Group and Network
A regional advisory group should be formed to help guide the development of a connected, regional green infrastructure network. The advisory group should help mobilize a regional network of businesses, communities, agencies, and other partners advocating for green infrastructure.

Continue Annual Green Infrastructure Breakfast
The Green Infrastructure Breakfast should continue as an annual event. The breakfast can be a showcase to measure the annual success of green infrastructure initiatives.

Develop Strategies for Increased Awareness
Strategies should be developed to increase awareness of green infrastructure to various groups, including:

- Regional and local elected officials.
- State and federal elected officials.
- Regional, state and federal agencies.
- Economic development agencies and chambers of commerce.
- Non-profits.
- Business and home owners.

Advocate for Increased Funding
Advocacy for increased funding for green infrastructure at community, regional, state, and federal level.

HeartLands Conservancy’s first annual Green Infrastructure Breakfast in May, 2013. Events and presentations like the breakfast raise awareness with community and regional leaders.

What other partners, businesses, agencies, and stakeholders should be part of this initiative?
B. The Need for Increased Data and Planning

The best way to achieve a connected green infrastructure network in the region is through science based data and planning. Below are current and future planning needs. It is expected that this list will grow as additional partners are identified. Good data and plans will lead to green infrastructure implementation with the most benefits.

**Economic Assessment / Cost Benefit Analysis of Green Infrastructure Benefits**
Develop regional data and examples of ecosystem services and the economic value of green infrastructure at the regional, community, and site scales.

**Regional Green Infrastructure Priority Plans**
Green infrastructure priority plans should be developed for each county (or watershed).

**Silver Creek - Upper Watershed Plan**
HeartLands Conservancy, Madison County, and the EPA are partnering on a watershed study of upper Silver Creek.

**Ecological Significance Mapping**
The East-West Gateway Council of Governments has already developed ecological significance data for their eight county planning area. The mapping should expand to additional surrounding counties.

**Comprehensive and Transportation Plans**
Green infrastructure principles should be incorporated within regional, county, and community plans.

**Other Research and Data**
Leverage and support efforts by various partners.
C. The Need to Advance Policy

Policy can have the biggest impact toward achieving a connected green infrastructure vision as policy creates a framework for planning, incentives, and funding. Policy is also multi-faceted, ranging widely from local to federal issues. Below are some general areas where policy changes can have the largest impact.

Agricultural and Land Conservation Incentives
At a regional scale, agricultural and land conservation incentives are highly effective tools for developing a connected green infrastructure network, especially on private lands. Just two examples, among many, are the Conservation Reserve Program and the enhanced tax incentive for conservation easement donations.

State and Federal Legislation
Advocate for state and federal legislation and policies that advance green infrastructure at a regional, community, and site scale.

County and Community Ordinances and Zoning
Local ordinances and zoning have the biggest impact on site and community strategies for green infrastructure. Policies that advance green infrastructure should be incorporated into local zoning and ordinances.

Market Based Solutions
There are many excellent, voluntary market-based policy tools such as the Sustainable Sites Initiative and LEED for Neighborhood Design that are business driven solutions for green infrastructure at a site or community scale.

The Sustainable Sites Initiative is an example of a voluntary, market based solution for promoting green infrastructure at a site scale.
D. The Need for Continued Implementation

Awareness, good data and plans, and supportive policy will lead to the implementation of a connected system of green infrastructure.

In many ways, we already have a head start. Every day there are new success stories of green infrastructure being implemented. Communities, businesses, agencies, and home owners have all made strides. We need to continue the successes and grow our connected system of natural resources.

HeartLands Conservancy Focus Areas
HeartLands Conservancy has worked to protect over 5,000 acres over the last 25 years. HeartLands Conservancy will continue to work with communities and landowners throughout Southwestern Illinois with a focus on the Kaskaskia River Bottoms and the Brushy Lake Ecological Restoration Area.

Other Regional Focus Areas
Regional efforts by land trusts, communities, agencies, and other partners to conserve land and implement green infrastructure should be supported.

Community Efforts
Communities sit at the nexus of growth and can benefit the most from green infrastructure. Implementing green infrastructure at a community level improves quality of life, increases biodiversity, decreases stormwater runoff, and provides recreational opportunities.

Site Specific Projects
Businesses and home owners are realizing the benefits of green infrastructure at a site scale.
In May 2013, HeartLands Conservancy held our first annual Green Infrastructure breakfast. Close to 100 attendees including elected officials, agencies, businesses, and other partners came together to learn more about green infrastructure and success stories about creating a green infrastructure network. We have the opportunity to leverage past success and create a green infrastructure vision in Southwestern Illinois and the St. Louis region. To implement a vision of a connected system of green infrastructure will take a network of regional leaders, communities, businesses, non-profits, institutions, agencies, and citizens working together. We have already had great successes, and now we invite you to join this success and the network of businesses, communities, and organizations that are stating their support of green infrastructure.

How can your organization, business, or community become involved and show your support?

**Show Your Support for Green Infrastructure Principles**
Have your organization, business, or community endorse the green infrastructure principles. We will list your organization, business, or community as a supporter of green infrastructure.

**Take a Leadership Role**
Take part in a committee or other leadership role as the network grows.

**Implement Green Infrastructure**
As this document shows, there are multiple ways to implement green infrastructure at regional, community, and site scales. Businesses, communities, institutions, homeowners and communities have the opportunity to implement and reap the benefits of green infrastructure within their communities and on their properties.

For more information, visit:
www.HeartLandsConservancy.org/green-infrastructure