The Green Infrastructure Framework for Southern Illinois
Volume 1: Metro East

HEARTLANDS CONSERVANCY
Investing in the Nature of Southwestern Illinois

Final Draft | Not for Public Distribution
OUR MISSION
Provide leadership and solutions to sustain and enrich the diverse environmental resources of southwestern Illinois.

OUR VISION
Communities with healthy and sustainable air, land, and water resources for current and future generations.

OUR FUTURE
Grow with our partners, build upon successes, and continue to invest in nature because the payoff is worth it.

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Mascoutah, Illinois 62258

Funding generously provided in part by
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Minneapolis, Minnesota 55401
www.mcknight.org

Final Draft 2016
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THE PLACE: METRO EAST

Our Sense of Place

At the Mississippi, Missouri, and Illinois Rivers – the confluence of these great rivers have created an abundant base for agriculture, commerce, and recreation. Their unique natural, historic, and cultural features are of national and international allure and have defined our local, regional, and national story. The Heartland lies here at the center of this pulsing 3,740-mile transcontinental river system and a 1.25 million square mile landscape. Here, cradling the very epicenter the American Bottom – is Southwestern Illinois.

Here is where east meets west and north meets south; where the languages and cultures of many lands have settled, where explorers and traders have found comfort and artisans inspiration. This is the place of the mighty Mississippian Culture at Cahokia Mounds, Lewis and Clark, Miles Davis, steamboats, civil marches, and engineering feats, like Eads Bridge. It was the sanctuary of many individuals in the quest to voice and realize freedom - Elijah Lovejoy, Abraham Lincoln, and countless enslaved individuals. It has served as the bridge to the West for centuries, with many of the most significant cross-continental trails passing through or originating here.

Southwestern Illinois and the Metro East were instrumental in the creation and perpetuation of river culture, agriculture, economic growth, transportation corridors, and artistic endeavors, all unique and critical to the fabric of today’s region. It is now a landscape-in-need that continues to tell intriguing tales developed over centuries in a place centered on extraordinary natural and cultural resources, and where much of the nation’s economy continues to flow. But over time, it seems to have withered, more due to development, ignorance and diversion than indifference. Over the recent decades, we have harmed and abandoned the landscape that drew us near. The air, waters, and soil once clean and rich are depleted and suffering. Yet those who grew, learned, worked, and played in its fertile earth have deep roots here. The communities are vibrant and strongly tied to this place. The social capital is abundant.

For over 26 years, HeartLands Conservancy has been protecting, conserving, and investing in the nature of Southwestern Illinois in critical ecosystems. It is time to embrace our responsibility at a larger scale - the scale where our watersheds emerge from the bluffs and blend into our great rivers. We must “follow the rain” to our larger responsibility - to heal our scarred ecology and conserve our assets of Southern Illinois.

This first volume of the Green Infrastructure Framework begins with the Metro-East strategy for Madison and St. Clair Counties. It is a green-print that we will continue to develop with further detail, while currently extending the framework into our contiguous counties through watersheds, natural resources, and foodsheds, and more specifically with individual communities.
Unique characteristics shape the southwestern Illinois region and its heritage: the scenic landscapes of rolling rural farmland, the calm open spaces, rich woodlands, powerful rivers, meandering waterways and wetlands, and vibrant communities with deep heritage. Collectively, they compose the land closest to our hearts – the region HeartLands Conservancy calls home. We serve the entire population of southwestern Illinois and the metro area, providing strong leadership and solutions to sustain and enrich the region’s diverse environment. Our mission and desire to invest in our region ensures future generations may live, work and build memories here.

As the region’s oldest and largest environmental not-for-profit, HeartLands Conservancy is uniquely placed to lead this effort.Originating in 1989 as Southwestern Illinois Resource Conservation & Development (SWIRC&D) served seven counties (Bond, Clinton, Madison, Monroe, Randolph, St. Clair and Washington). As part of the RC&D program, local community leaders from throughout Southwestern Illinois united in an effort to protect the region’s unique and vast natural resources. Through advancing technology SWIRC&D built a digital resource division culminating research, analysis, mapping, and display of enriched GIS data. Combining extensive regional data with innovative technology led to an award-winning natural resource planning and environmental assessment team.

As environmental, recreational, and cultural resources do not align with county lines, additional work was undertaken in adjoining watersheds and counties and SWIRC&D became HeartLands Conservancy. Through innovative planning and strategic resource assessment, more than 7,000 acres have been permanently protected; and more than $30 million invested in Southwestern Illinois. Our focus continues to be on protecting our unique, vast natural and cultural resources and we do that through three program areas: conserving land, building greener communities, and engaging people and communities with nature.

HeartLands Conservancy is dedicated to advancing, sustaining and enriching the region’s finest qualities to ensure lasting equitable, economic and environmental benefits. The air, land, and waters will always be our greatest resource. Our future generations are our greatest priority. There is no shortage of conservation and economic challenges. More work needs to be done.

We have the tools: strong, experienced team and community partnerships, a comprehensive resource library, strategic priorities in place, and now the Green Infrastructure Framework for Southern Illinois. This regional green infrastructure is critical. Engaging people and communities with nature is imperative. Combining these elements as a connected system is a sustainable system – to restore, conserve, and protect Southern Illinois.

We all can make a difference, together.
HOW WE BUILD GREENER COMMUNITIES

Environmentally healthy communities are highly desirable for overall quality of life. To achieve this, we provide leadership in community planning and implementation of key initiatives with cultural resources, parks, trails, and stormwater management.

- Smart Growth
- Neighborhood Planning
- Watershed Planning
- Stormwater Initiatives
- Cultural Planning & Preservation
- Bicycle & Pedestrian Plans
- Green Infrastructure Planning
- Regional Master Planning
- Sustainability Partnerships

HOW WE CONSERVE LAND & PROTECT NATURAL RESOURCES

Protecting and preserving our vital natural resources: waterways, wetlands, prairies, forests, wildlife and habitats, agricultural, and recreational lands. Additionally, providing leadership and conservation tools for individuals and communities.

- Farmland Protection Program
- Habitat Restoration
- Wetland Restoration
- Conservation Easements
- Shawnee National Forest
- Mill Creek
- Community Education & Outreach
- The Mounds - America’s First Cities NPS Designation Initiative

HOW WE ENGAGE INDIVIDUALS WITH NATURE

We seek to connect residents of our region with the surrounding lands and waters in inspiring ways, such as guided hike, paddle, and bike treks. The scenic landscapes of southwestern Illinois make it unique and we’re proud to call it home.

- Hiking & Biking Treks
- Water Treks
- Seed Saving Gardens
- Lots of Love Initiative
- Volunteer Networks
- Collaborative Partnerships
- Stewardship Programs
CHALLENGES

OVERVIEW

Existing threats to health and quality of Southwestern Illinois’ natural resources include fragmentation, invasive species, pollution, and unplanned or poorly planned growth. These threats hinder the development or existence of a viable green infrastructure framework, if one remains at all. Regional maps of existing conditions were reviewed from East-West Gateway Council of Governments and OneSTL. Through a gap analysis of geospatial information, trends, and resources, opportunities and challenges are present that are unique to Metro-East, relative to the rest of the St. Louis Metropolitan Service Area. These are explored in the recommendations.

FRAGMENTATION

Fragmentation occurs when urban development, roadways, agricultural land use, or residential dwelling(s) bisect the landscape, breaking apart large contiguous blocks of forest, prairie or other natural habitat. Much like a broken mirror, fragments of a landscape can be of various shapes and sizes, all have a distinct edge, and it would be difficult to fuse all the fragments into a cohesive whole again. Fragmentation is important to note for various reasons such as:

- Continuity of complex foodsheds broken apart by fragmentation
- Decreased micro-habitats of singular species
- Habitat/travel corridors associated with larger species (i.e., birds of prey, apex predators, white-tailed deer, etc.) are often fractured, disconnected, or removed.
- Decrease in buffer between wildlife and humans, resulting in closer interface
- Negative impacts of “edge” habitat including:
  - Increased motor vehicles accidents with wildlife
  - Increased non-native species (non-native, invasive species often thrive in edge habitat where sunlight is more plentiful)
  - Loss of species that need “interior” habitat characteristics (e.g., less sunlight, more varied resources, less interaction with developed land uses – often native species that are endangered, rare, or sensitive)

Aside from ecological concerns, humans also lose many of the aesthetic, healthful, recreational benefits that unfragmented expanses of open space provide. While fragmentation may situate their home, office, or morning drive along a beautiful wooded area, the consequences are often not ideal. Increased wildlife in the trash or dumpsters, and other “nuisance” features of wildlife that are actually important characteristics of natural landscapes (e.g., moles burrowing across lawns, populations of birds and insects, etc.)
Stormwater Lacking Tree Canopy Poor Planning Infrastructure
Flood Turf Food Desert
Water Quality Cultural Loss Pollution
Growth

Overall, Southwestern Illinois is a growing area. The “Metro East” area is considered the second largest concentration in the State of Illinois, after the Chicago metro area. As population increases, there are more residential and business developments increasing pressure on the natural resources, old growth natives, and increasing pollutants.

Pollution

In this scenario, pollution is broadly categorized into two groups: air pollution and water pollution. Air pollution plagues much of Southwestern Illinois. Its own urban and industrial areas contribute to decreased air and water quality. However, for centuries, St. Louis urbanized and/or industrialized districts blow westerly winds carrying many pollutants into the air, landscape, and water. The US EPA and other federal and state agencies pushed for identification and control of point sources strategically, and with success, following the Clean Air and Clean Water Act. With 33 major watersheds, Illinois is abundant in water – lakes, rivers, streams, and wetlands. Water pollution in Southwestern Illinois, like much of the country, is now comprised mostly on non-point sources. The region (as the rest of the country) is left to grapple with treating unidentifiable non-point pollution sources as it collects in the water table and the environment. Working to minimize, mitigate, and buffer the pollution in and along 303d streams is critical. Currently the polluted waterways total 3,409 acres of impaired lakes and 261 miles of impaired streams in the Metro-East.

Invasive Species

As discussed, invasive species often go hand-in-hand with fragmentation. Many invasive species thrive in areas where plentiful sunlight allows for rapid, unbridled growth, usually in cultivated landscapes. The spaces and edges formed through fragmentation provide those exact conditions for them. In addition, often the materials and foot traffic that create the fragmented landscape often bring in non-native (invasive) volunteer seed sources. Or inversely, bringing the invasive seeds to these ideal conditions, where they can and will thrive. They quickly take (shallow) root and can populate an area in one growing season what would take native plants a decade or two to fill. Invasive species prolifically grow into mono-cultures, reseeding, and dominating the landscape. This severely limits the growth of other, more beneficial vegetation and decreases food sources for native wildlife, impairing their livelihood. Increase in disease, loss of bio-diversity and loss of stabilizing deep-rooting native plant communities, equates to a net-loss in ecological services, values, and resources to the surrounding region for decades.
THE SOLUTION IS GREEN

GREEN INFRASTRUCTURE IS NOT A NEW CONCEPT

In the 1860s landscape architect Frederick Law Olmsted included systems of open space in the plans he created for cities and towns across the United States. These systems preserved floodplains and riverbanks and protected water quality while providing recreational and scenic opportunities for residents and established connections between larger pieces of open space.

A century and a half later the value of creating and protecting green infrastructure remains. “A connected system of parks and parkways is manifestly far more complete and useful than a series of isolated parks.” - John Olmsted and Frederick Law Olmsted Jr. 1903

OVERVIEW

Green infrastructure integrates a variety of aspects of society, offering possible solutions to existing threats to our quality of life and our environment, specifically issues of air and water quality, sustainable water supply, road congestion, habitat degradation, climate change, and chronic diseases, such as obesity and diabetes. As these primary environmental challenges are addressed, secondary (increasing access to nature, improving health and well-being; and elevating quality of life) and tertiary benefits (economic benefits, increased value, renewed investments) come to fruition.

Just as we are dependent on grey infrastructure—i.e., roads, pipes, bridges—to support transportation, water, and energy systems, we unknowingly depend on green infrastructure to sustain natural life. Just as grey infrastructure networks are planned, built, and maintained, planning for our green infrastructure network needs to follow a strategic approach that can advance sustainable use of land while providing an interconnected system of green spaces that benefit people, the environment, and the economy. Utilizing the maps from East West Gateway Data library shown on the previous pages, we were able to synthesize the greatest opportunities for interventions.

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.

DEFINING GREEN INFRASTRUCTURE

In proceeding, the following definition of green infrastructure was adopted: “an interconnected network of natural areas and other open spaces that conserves natural ecosystem values and functions, sustains clean air and water, and provides a wide array of benefits to people and wildlife... in short, [it is] our natural life-support system.” (Benedict and McMahon, 2006)

GUIDING PRINCIPLES FOR GREEN INFRASTRUCTURE

• Protect existing public and private open space and natural areas.
• Conserve additional lands to assemble high quality natural areas of sufficient scale.
• Connect large blocks of natural areas with corridors.
• Promote stewardship of protected lands and natural areas.
• Expand public preserves, acquire large new sites, and/or protect areas through the actions of private land owners when possible.
• Develop water resource inventories and plans for watersheds draining into the
THE GREEN INFRASTRUCTURE PROJECT

Project Background

Since 1989, singular initiatives have been studied, developed, and implemented thoughtout the region - all working towards a healthier environment and coexistence with development, agriculture, and ecology. Soon thereafter, HeartLands Conservancy identified the need for a coordinated effort to investigate green infrastructure on a regional scale. In 2013, a preliminary report was produced - Existing Conditions - An Inventory of Existing Green Infrastructure Assets. The goal was to understand the ecological, water, agriculture, and recreation assets in the seven county region comprising southwestern Illinois – Bond, Clinton, Madison, Monroe, St. Clair, Randolph and Washington.

This effort was followed by A Roadmap For Green Infrastructure - Creating A Vision for A Connected System of Green Infrastructure in Southwestern Illinois that was developed to begin a definitive discussion on how to approach Green Infrastructure planning in Southwestern Illinois. To help understand the components and benefits of green infrastructure, this document defined the following categories: ecological assets, water resources, recreational assets, and agricultural lands. These categories are not mutually exclusive. There is significant overlap between them. But by simplifying the categories, we can better understand the components and interactions in a green infrastructure network.

Highlights from both documents are assimilated into this report when appropriate. To better inform the final framework, further care was taken to modify their original content in order to address developments, changes in policies, best practices, and changing data during the planning process.

Lastly, to implement a vision of a connected system of green infrastructure takes a network of regional leaders, communities, businesses, non-profits, institutions, agencies, and citizens working together. HeartLands Conservancy held the first annual Green Infrastructure Breakfast in May, 2013. Close to 100 attended including elected officials, agencies, businesses, and other partners. They came together to hear success stories and learn more about creating a green infrastructure network. The event has continued in various capacities with featured speakers and discussions of Illinois’ green infrastructure. Events and presentations like the breakfast raise awareness with community and regional leaders. This is an opportunity to leverage and grow these initial willing participants into an advocacy/steering/implementation committee.

Benefits of a Green Infrastructure Network

- **Health**: Improved human health via increased physical activity, cleaner air and water, and enjoyment of the outdoors;
- **Economy**: Increased local tax base, enhanced property values, increased tourism, prevention of flood damage;
- **Food**: Protection of topsoil, soil health, and pollinators to sustain farms and the local food system; and
- **Plants and Wildlife**: Protection of habitat and biodiversity to support all the plants, animals, insects, etc, needed for a healthy ecosystem to support all of the above.

Benefits of a Green Infrastructure Network

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- **Economy**: Increased local tax base, enhanced property values, increased tourism, prevention of flood damage;
- **Food**: Protection of topsoil, soil health, and pollinators to sustain farms and the local food system; and
- **Plants and Wildlife**: Protection of habitat and biodiversity to support all the plants, animals, insects, etc, needed for a healthy ecosystem to support all of the above.
FRAMEWORK

PROJECT CONTEXT

For the purposes of this document, The Green Infrastructure Framework for Southern Illinois: Volume 1 – Metro-East, Madison and St. Clair Counties were further analyzed and a contiguous framework strategy developed. As resources allow, this document will be expanded to the remaining five counties covered in Existing Conditions - Bond, Clinton, Monroe, Randolph and Washington – and then further adjacent counties and contiguous watersheds.

BUILDING A NETWORK

As a foundation, the planning process, framework development and the recommendations for implementation are aligned in green infrastructure common planning principles from Green Infrastructure: Linking Landscape and Communities, Washington DC, Island Press, 2006.

- Connectivity is key.
- Context matters.
- Green infrastructure should be grounded in sound science and land-use planning theory and practice.
- Green infrastructure can and should function as the framework for conservation and development.
- Green infrastructure should be planned and protected before development.
- Green infrastructure is a critical public investment that should be funded up front.
- Green infrastructure affords benefits to nature and people.
- Green infrastructure respects the needs and desires of landowners and other stakeholders.
- Green infrastructure requires making connections to activities within and beyond the community.
- Green infrastructure requires long-term commitment.
EXISTING CONDITIONS

Geography of Place
The western boundary of the project area is the Mississippi River. Its basin is the world’s third largest watershed at 1.25 million square miles—behind only the Amazon and the Congo. The length of the Mississippi River from north to south is 3,400 miles with a descent of 1,600 feet, three-fourths of that drop occurring prior to reaching the mouth of the Missouri River. The Mississippi, Missouri (2,431 miles), and the Illinois Rivers (273 miles) make up the majority of a 9,000 mile navigable inland waterway linking the project area to the Atlantic Ocean, the Great Lakes, the American Great Plains, the Port of New Orleans, and the Gulf of Mexico.

The eastern boundary reaches through the unique American Bottom and up the Illinois limestone bluffs, Midwestern prairies and eastern forests, floodplain/floodway, historic backwaters (Horseshoe Lake), and numerous wetlands, bottomland and upland forests, prairies, creeks, seeps, springs, glades, caves, and sinkholes—all important habitats with magnificent scenic qualities.

Geomorphology
The area’s diverse geomorphology comprises two main geological formations: the Illinois Basin and the Ozark Dome. The Illinois Basin, which is rich in fossil fuel, was once a natural plain of tall-grass prairie but now is a fertile agricultural region. The Illinois Basin formation wraps the region from all sides except the southwest, where the remaining portion of the region south of the Missouri River and west of the Mississippi River is the northeastern edge of the Ozark Dome. These two geological formations have contributed to the economic development of both states and their various industries.

The sheered bluffs along the river have been extensively mined for coal, loess, and limestone predating the 1800s. They also act as natural levees for floods while providing viewsheds across the rivers to the bottomlands of Missouri and Illinois. Often from the sides and top of the bluff, the Karst layer reveals itself in caves, sinkholes, caverns and settling of the top soil and shifted bluff edges.

Below the bluffs in Illinois, is the American Bottom, farmed as fertile land since 6000 B.C., extends from Alton to Kaskaskia, Illinois, averaging six miles in width and extending for 90 miles. The 100-year natural and constructed levee system of the region protects the main urban centers and industry along the rivers. In addition, the secondary levee system, which ranges from 5 to 50-year levees, protects mainly agricultural lands.
MADISON COUNTY, IL

**Population**

![Population graph](image)

**Population Estimates (ACS)**

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<tr>
<th>Year</th>
<th>#</th>
<th>% Change</th>
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<tr>
<td>2015 5-yr estimate</td>
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Source: American Community Survey 2015

**Population Estimates (PEP)**

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<tr>
<th>Year</th>
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<th>% Change</th>
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<tbody>
<tr>
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<td>268,583</td>
<td>-</td>
</tr>
<tr>
<td>2012</td>
<td>268,092</td>
<td>-0.2%</td>
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<tr>
<td>2013</td>
<td>267,263</td>
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<tr>
<td>2014</td>
<td>266,635</td>
<td>-0.2%</td>
</tr>
<tr>
<td>2015</td>
<td>266,209</td>
<td>-0.2%</td>
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Source: Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2015

**Historical Population Counts**

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<tr>
<th>Year</th>
<th>#</th>
<th>% Change</th>
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<tbody>
<tr>
<td>2000</td>
<td>258,941</td>
<td>-</td>
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<tr>
<td>2010</td>
<td>269,282</td>
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Source: Decennial Census 2010, 2000
2015 POPULATION
266,209

MEDIAN HOUSEHOLD INCOME
$53,431

SEX BY AGE

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<tr>
<th>Age Group</th>
<th>Female</th>
<th>Male</th>
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<tr>
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<td>60 to 69</td>
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<td></td>
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<tr>
<td>70+</td>
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EDUCATIONAL ATTAINMENT

- No Diploma: 16.3%
- High School: 32.3%
- Some College: 9.0%
- Bachelors: 8.1%
- Graduate: 9.0%

RACE & ORIGIN

- White: 86.0%
- Black: 1.9%
- American Indian: 0.2%
- Asian: 0.1%
- Islander: 0.1%
- Other: 0.1%
- Hispanic: 8.6%

POVERTY
9.6%

UNEMPLOYMENT
5.7%

HOUSING UNITS
117,919

HOUSEHOLDS
107,111

Source: United States Census Bureau. The US Census Bureau’s 2015 Population Estimates dataset has the most current population estimate data. The US Census Bureau’s 2015 American Community Survey dataset has the most current demographic data (i.e., race).
ST. CLAIR COUNTY, IL

**Population**

![Graph showing population trend from 2000 to 2015.]

**Population Estimates (ACS)**

<table>
<thead>
<tr>
<th>Year</th>
<th>Estimate</th>
<th>% Change</th>
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<tbody>
<tr>
<td>2015 5 yr estimate</td>
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<td>-</td>
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Source: American Community Survey 2015

**Population Estimates (PEP)**

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<th>Year</th>
<th>Estimate</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>2011</td>
<td>270,024</td>
<td>-</td>
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<tr>
<td>2012</td>
<td>268,655</td>
<td>-0.5%</td>
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<tr>
<td>2013</td>
<td>266,863</td>
<td>-0.7%</td>
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<tr>
<td>2014</td>
<td>265,552</td>
<td>-0.5%</td>
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<tr>
<td>2015</td>
<td>264,052</td>
<td>-0.6%</td>
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Source: Annual Estimates of the Resident Population: April 1, 2010 to July 1, 2015

**Historical Population Counts**

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<thead>
<tr>
<th>Year</th>
<th>Estimate</th>
<th>% Change</th>
</tr>
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<tbody>
<tr>
<td>2000</td>
<td>256,082</td>
<td>-</td>
</tr>
<tr>
<td>2010</td>
<td>270,056</td>
<td>5.5%</td>
</tr>
</tbody>
</table>

Source: Decennial Census 2010, 2000

2015 POPULATION
264,052

MEDIAN HOUSEHOLD INCOME
$49,895

SEX BY AGE

EDUCATIONAL ATTAINMENT

RACE & ORIGIN

POVERTY 14.7%

UNEMPLOYMENT 5.4%

HOUSING UNITS 117,949

HOUSEHOLDS 102,267

Source: United States Census Bureau. The US Census Bureau’s 2015 Population Estimates dataset has the most current population estimate data. The US Census Bureau’s 2015 American Community Survey dataset has the most current demographic data (i.e., race).
Rivers and Hydrology

Within the project area, the rivers and the secondary streams and creeks demonstrate a full range of hydrological river features that tell a story of how man has attempted to control – and often been at the mercy of these natural resources.

At the confluence of the Illinois River, the currents of the rivers aren’t forceful enough to pull the sediment through, so braided channels and semblances of delta islands emerge south of Pere Marquette State Park. In the area between the Mississippi and Missouri Rivers, the floodplain expands wider across the alluvial valley between Illinois and Missouri bluffs and the river is underlain with bedrock.

Below the Alton area, the river islands are fewer and larger than found upstream due to the increased speed of the water. From south of the confluence with the Missouri, the Mississippi takes on a different character. Here, the river flows more quickly as a result of being undammed and restricted by levees. The Chain of Rocks Canal was built to allow barge traffic to avoid the Chain of Rocks, a natural feature historically treacherous for shipping.

Throughout the project area surface scars on the floodplain of the American Bottoms, show the river has shifted its course many times over the soft sediment, leaving oxbow lakes and isolated backwaters as remnants, such as Horseshoe Lake, a state park.

Kaskaskia River Corridor

Running northeast to southwest for a total of 325 miles the Kaskaskia River corridor is a significant migratory and ecological corridor within the state. Of the 59 animal species found in Illinois, 83% reside within the watershed. For reptiles, 60% of the species are represented in the basin. Vascular plants total about 1,100 species in the basin, or 40% of those in Illinois. Of the bird species found in Illinois, 287, or an amazing 96% are found here (including migrants).

The largest bottomland, hardwood forest within Illinois, at 43,000 acres, is located along the Kaskaskia between Carlyle Lake & Fayetteville. One tract within this forest is the single largest contiguous tract in Illinois (7,300 acres) and is approximately two miles wide at certain points. These dense forest blocks are especially important to neotropical songbirds that visit here from Central and South America.

Bottoms and Islands

The American Bottom is the area that refers to lands built up by the deposition of silt and sediment as the Mississippi River changed with the seasons before the land and river became engineered and constrained with levees and dams. This land has been farmed due to the rich soil that was left by the rivers. This area, which lies east of the Mississippi River to the limestone bluffs from Alton south to the mouth of
the Kaskaskia River, is commonly referred to the American Bottom ecosystem. This area once contained undulating ridges and swales offering a variety of habitat types, including wide bottomland forested corridors and up to 35% wetlands. Since urbanization of this region occurred, much of this land has been leveed, drained, leveled and otherwise modified in such a manner that little high-quality native habitat remains.

The Chouteau Island complex is made up of three islands in the Mississippi River: Mosenthein Island, Gabaret Island, and Chouteau Island. This area, collectively referred to as Chouteau Island, is located one mile south of the confluence of the Mississippi and Missouri Rivers and approximately two miles north of the Gateway Arch. The islands are bound by a unique natural corridor of the Mississippi River on the west and the Chain of Rocks Canal constructed by the Army Corps of Engineers on the east. The total land acreage for all three islands is approximately 5,500 acres. The islands average approximately one mile in width, narrowing near the ends, and 7.5 miles in length, running the entire length of the Chain of Rocks Canal. This complex is critical open space for habitat in the corridor.

Chouteau Island is approximately 3,200 acres. It was used for farming due to the rich soil left by the river. Because of its location – being surrounded by the river – the Island has been the site of frequent flooding. Residents left the island after the 1993 flood, and the island is now home to public lands, farmland and a waste management facility. Before the construction of the Chain of Rocks Canal, which separated the island from the Illinois mainland, the island was located in the Mississippi River. With the canal on the east side of the island allowing for barge traffic to pass, the western edge of the islands allows visitors a unique opportunity to see the river in an unregulated state in the midst of an urban setting. Gabaret Island is 1,300 acres lying directly adjacent to Chouteau Island and separated by the Gabaret Slough. Lewis & Clark camped on this island on December 11, 1803, one night before establishing their winter camp at Wood River, IL.

Mosenthein Island is 1,000 acres of publicly owned land in the middle of the Mississippi River that is accessible only by boat. It is undeveloped and appears as it would have nearly 200 years ago. The Illinois Department of Natural Resources purchased this island in November 2001. The island was greatly affected by the 1993 floods, and today is mostly forested with beaches commonly used for fishing. Many proposals in the past for the island have focused on its sandy beaches. The beaches were a popular recreational spot in the late 1940s and 1950s.
Ecology, Habitat, and Landscape

This all provides habitat for many hundreds of plants and wildlife species that populate its islands and conservation areas, including several that are endangered or threatened. However, the habitat along the river corridor has been in decline over the last century. The fragile riparian ecosystems along the river have been compromised by agricultural practices and built settlement patterns, with the result being that the size, scale, and diversity of the natural riparian ecosystems is severely compromised.

A few large wetlands and conservation areas nearby such as Pere Marquette and Riverlands, clearly demonstrate that the potential exists along the rivers’ bottomlands and uplands to improve substantially the habitat, water quality, and riparian ecosystems. Similarly, along the edge of the secondary rivers, streams, and creeks, riparian corridors would help to improve water quality and surrounding habitat, protecting the shoreline from erosion and help to filter pollutants. Many areas that were once perennial wetlands, also play key roles in the region’s ecological systems and need to be protected and expanded where possible. Once the fragmentation begins in a homeostatic environment, it is difficult to regain its balance and almost impossible for it reconnect through manmade settlements.

From the USGS, floodplain forests are now confined to a riparian zone a few kilometers wide at most. Agricultural and urban developments have been leading causes of floodplain forest loss along the Upper Mississippi River. By 1929 farmland and urban areas covered 22% of the floodplain, and forest had declined to 29% of its former extent (Peck and Smart 1986). In 1989 forests covered 1,233 square kilometers (14.3%) of the Upper Mississippi River valley (Lastrup and Lowenberg 1994).

Flooding, erosion, and sedimentation are powerful natural processes that shape floodplain landscapes and affect succession and species composition of floodplain forests (Shelford 1954; Wistendahl 1958; Bedinger 1978; Hupp and Osterkamp 1985). However, these hydrological and geomorphic processes have been constrained for several decades by navigation and flood-protection structures in the Upper Mississippi River.

Individual forest stands in the Upper Mississippi River floodplain can be dominated by any or a few of several species, including (but not limited to) black willow, eastern cottonwood, sycamore, boxelder, silver maple, river birch, green ash, American elm, hackberry, pin oak, bur oak, and swamp white oak. Floodplain forests at the confluence of the Mississippi and Illinois rivers, co-dominated by hackberry, elm, pecan, willows, and eastern cottonwood during early European settlement, are now dominated by silver maple (Nelson et al. 1994). It has become critical to review and remove volunteer exotics, invasive species, such as Bradford pears.
During the last several million years, the larger rivers of the Mississippi River drainage system have presumably fluctuated between two very different channel patterns (braided and meandering), which provide different types and abundances of aquatic habitats. Although major changes in climate have also occurred, including the Pleistocene glaciations, there have been few fish extinctions. Many fishes probably retreated ahead of southward-moving glaciers and repopulated northern reaches of the basin as the glaciers receded (Hynes 1970).

Most fishes require several different habitats to complete a life cycle. The quantity and quality of certain habitats, however, have diminished in many reaches. In the Upper Mississippi, the navigation pools are aging, and overwintering habitats for fish have declined as sedimentation reduces water depth (McHenry et al. 1984; Bhowmik and Adams 1989; Holland-Bartels 1992; Gent et al. 1995). Recent die-offs of aquatic vegetation have reduced the suitability of many areas as nursery habitats for fishes. In many places, declines of invertebrate prey organisms associated with soft bottom sediments (Brewer et al. 1995; Wilson et al. 1995) and aquatic vegetation (Chilton 1990) have diminished food resources for fishes.

The Mississippi River can provide many aquatic habitats, including main channel, tailwater, main-channel border, side channel, navigation pool, floodplain lake or pond, slough, and tributary mouth (Littlejohn et al. 1985; Fremling et al. 1989). These habitats can differ markedly in current velocity, depth, temperature, water quality, bottom substrate, vegetative structure, food resources, and other characteristics.

The Mississippi River is a major bird migration corridor within North America. It serves as an important winter nesting grounds for the North American bald eagle. Approximately 40% of all North American migratory waterfowl and Neotropical songbirds use the Mississippi Flyway. Millions of migratory birds use the Mississippi River corridor each year during fall and spring migration. The river’s north-to-south orientation and nearly contiguous habitat with old-growth forests - like Bohm Woods - make it critical to their life cycle. Riverine floodplain habitats are vital to the life cycles of many migratory birds. Diving ducks, swans, pelicans, and cormorants use the river’s large open-water pools, and dabbling ducks, geese, herons, egrets, black terns, bitterns, rails, and numerous resident and Neotropical migrant songbirds use shallow backwater riverine wetlands. Bottomland forests support migrating and nesting populations of songbirds, bald eagles, ospreys, herons, egrets, hooded mergansers, mallards, and wood ducks.
**Prime Farmland**

Illinois contains some of the most highly productive soils in the world and southwestern Illinois is no exception. Approximately 800,000 acres in agriculture are listed as prime farmland, (recognized by USDA as land that has the best physical and chemical characteristics for producing food, feed, forage, fiber and is available for these uses), and another 400,000 acres are listed as soils of statewide importance (determined by the state and nearly meet the qualifications of prime farmland). This acreage is important in the production of corn and soybeans. Washington County also boasts the largest winter wheat harvest in the State of Illinois. Much of the world’s supply of horseradish is produced in the Collinsville, Madison County area, due in part to the high potash content within the soils.

**Southern Flatwoods**

Post oak flatwoods, also known as southern flatwoods, once covered 1.5 million acres in the southern one-third of Illinois, before European settlement. This region of the state, defined in the Natural Divisions of Illinois as the Southern Till Plain, is the world’s primary home of the post oak flatwoods community. Today, however, this community type continues to disappear. The Illinois Natural Areas Inventory, (INAI), found that only 658 acres of high quality post oak flatwoods remain in all of Illinois. This amounts to little more than .0004 percent of the original post oak flatwoods landscape that existed in Illinois 200 years ago. A majority of the remaining high quality southern flatwoods are located in the southwestern Illinois counties of Clinton, St. Clair and Washington. Relatively few acres are permanently protected.

**KARST**

The karst topography, located in portions of Madison, Monroe, Randolph and St. Clair Counties contains an estimated 10,000 sinkholes, with as many as 230 per square mile. There are a total of 142 known caves within this region, the largest being Illinois Caverns. These caves are the only place in the world where the Illinois cave amphipod, a small cave-dwelling crustacean, is found.

**Hill Prairies**

There are several Illinois Natural Area Inventory sites in the bluff corridor between Dupo and Prairie du Rocher that contain prairie complexes. Many of these sites remain today due to the steep slopes preventing their conversion for agricultural purposes. Invasive plant species, including red cedar and bush honeysuckle are actively taking over these sites, leading to the loss of four identified Illinois Natural Area Inventory sites since 1976. Without active resource management many more sites will be lost over the next.
Water Resources

Southwestern Illinois contains a wealth of water resources, including the Mississippi River, the Kaskaskia River, and Carlyle Lake, the largest man-made lake in the State of Illinois. There are also approximately 200,000 acres recorded as “wetlands” within the region. These resources are truly multi-functional, offering opportunities for drinking water, recreation, industry, agriculture and navigation. While our water resources are considered as assets, many of these resources possess some level of contamination. The seven county Metro East region contains approximately 26,000 surface acres of impaired lakes. Carlyle Lake alone makes up nearly 85% of this total. Pollutants include remnants of pesticides and herbicides that have now been banned or are heavily regulated, as well as elements such as phosphorus, manganese, and zinc. Another issue affecting the region’s lakes is aquatic algal blooms from high nutrient deposition leading to lower dissolved oxygen levels. Sources of these pollutants include urban storm sewer runoff, agricultural practices including crop production and animal feeding operations, industrial point discharge, recreational pollution sources and on-site waste treatment systems.

There are also approximately 800 miles of impaired rivers and streams in the region. Many waterways have incurred stream bank alterations and loss of vegetation creating high levels of sedimentation and changes in depth and velocity of water. Pollutants include chemical elements and compounds such as barium, manganese, nitrogen, phosphorus, silver, copper, sulfates and ammonia. The sources include many of the same lakes listed above, as well as municipal point source, combined sewer overflows, site grading for land development, surface mining and impacts from abandoned mines. Polychlorinated biphenyls, dissolved oxygen levels, sedimentation and siltation, pH values, fecal coliform, total dissolved and suspended solids levels affect both bodies of water as well as rivers and streams in the region and also originate from the sources...
Watershed Planning

HeartLands Conservancy has been taking the lead on five watershed plans in the Metro East. One is completed, three are midway, and one is in the early stages of stakeholder engagement. The challenges, opportunities and results of these plans will directly feed into the priority projects, recommendations, and the future implementation strategy of the green infrastructure framework.

Upper Silver Creek Watershed Plan

The Upper Silver Creek watershed covers a 120,000-acre area in eastern Madison County and southern Macoupin County. The watershed is largely agricultural, but also includes all or portions of 13 municipalities such as Troy, Marine, and Hamel. Madison County officials recognized a need for stormwater planning in the watershed: Silver Creek was consistently listed on the state’s 303(d) list as an impaired stream, communities and the county regularly received reports of flooding, and previous efforts to attract funding had not been fruitful. In 2013, Madison County coordinated with HeartLands Conservancy to apply for funding from Illinois EPA to create a watershed plan for the Upper Silver Creek watershed. The funds were granted over a two-year period. In the first year, an inventory of the watershed’s resources and issues was compiled. In the second year, a plan was created to address the issues identified and provide a roadmap to a healthier watershed. Throughout the planning process, stakeholder engagement was solicited. Small group meetings with municipalities, townships, and other entities were held, four Open House events were held for public input, and a Technical Committee was formed from watershed stakeholders and partners in the watershed plan. The watershed plan was submitted to and approved by Illinois EPA in November 2015. In 2016, Illinois EPA approved HeartLands Conservancy’s application for a $570,000 grant to help implement several of the practices recommended in the watershed plan. This grant will be administered by HeartLands through 2018.

Indian-Cahokia Creek Watershed Plan and Canteen-Cahokia Creek Watershed Plan

Following the success of the Upper Silver Creek Watershed Plan, Madison County expanded the scope of its stormwater program. A countywide Stormwater Management Plan was drafted and presented to the county’s Stormwater Commission in 2016. The countywide plan brings the Upper Silver Creek Watershed Plan under its umbrella, and sets out a framework for completing watershed plans for each of the county’s ten watersheds. In 2015, watershed planning efforts were begun for the second and third-largest watersheds in the county: Indian Creek-Cahokia Creek and Canteen Creek-Cahokia Creek. These watersheds cover 183,000 acres in Madison, Macoupin, and St. Clair Counties and are adjacent to one another on
the western side of Madison County, flowing into the Mississippi River. They contain densely populated areas including the municipalities of Edwardsville, Glen Carbon, Maryville, and Collinsville, where several stormwater and urban flooding issues have long been known. Stakeholder engagement in the watersheds included small group meetings, Open House events, presentations to professional associations, and the creation of a Technical Committee of experts and two Advisory Groups comprised of municipal, township, and other representatives. The U.S. Army Corps of Engineers completed the Watershed Resources Inventory, the first phase of the watershed planning process, in January 2016. The watershed plans will be created using the information in the inventory from 2017-2018.

**American Bottom Watershed Plan**

The American Bottom Watershed Plan is the most recent watershed planning effort begun in Madison County. The watershed covers the 43,000-acre area that lies between the Mississippi River and the bluffs. Stakeholder engagement began in fall 2016 with small group meetings and two Open House events. Severe urban flooding issues and industrial pollutants were two key issues identified by stakeholders so far. Many homes and businesses were built in the floodplain and in flood-prone areas with a high water table before there were regulations to protect development from these issues. The U.S. Army Corps of Engineers plans to begin a Watershed Resources Inventory for this watershed in 2017.

**Lower Silver Creek Watershed Plan**

Heartlands Conservancy received funding from Illinois EPA to create a watershed plan for the Lower Silver Creek watershed in 2016, to complete watershed plan coverage for the entire Silver Creek watershed. The watershed covers over 124,000 acres and includes all or portions of eight municipalities such as Lebanon, Mascoutah, Shiloh, and Freeburg. The watershed has experienced severe flooding in places. Neighborhoods, subdivisions, and even entire villages have been threatened by being cut off by road flooding during heavy storms. There are opportunities for wetland restoration and retention facilities along Silver Creek that would increase the detention of floodwater, improve water quality, and protect critical infrastructure, including infrastructure at Scott Air Force Base. Scott Air Force Base’s Community Partnership Group for stormwater was convened in fall 2016 to present the planning effort to representatives from the Base and from municipalities in the watershed. This group will be convened at least three more times during the watershed planning process. Several small group meetings with municipalities were also held in the fall and winter. A public Open House event for the plan will be held in February 2017. In the meantime, Heartlands Conservancy is working on compiling information for the Watershed Resources Inventory, due in May 2017.
EXISTING PARTNERS, PLANS AND INITIATIVES

Green infrastructure planning is a long-term effort and implementation process. Given this, several related and ongoing planning efforts were reviewed during the preparation of this study, including prior plans completed by adjacent communities, partnering agencies, and interest groups, such as The Nature Institute, Great Rivers Land Trust, Clifftop Alliance and others. Their missions, collaborators, and initiatives have worked together to conserve significant open spaces throughout the region. Individual agencies and entities are also shaping the vision of connectivity and sustainability within Southwestern Illinois as noted below. This is not a complete list by any means. It is a sampling of organizations and initiatives in the region.

Throughout the initiative’s evolution and development, it will promote sustainability, conservation, stewardship, and continued integration with other partners’ initiatives. The project will continue to build upon, coordinate, and support concurrent planning and implementation efforts in the area.

American Bottom River Corridor Resource Inventory “The Inventory was the result of public, government, and conservation organizations’ concerns regarding the impact of years of development and neglect on the quantity and quality of the natural resources in the American Bottom.” The tasks were related to inventorying, analyzing, and developing recommendations on the quantity and quality of the natural resources.

Great Rivers Land Trust is a land conservation nonprofit, with an office located in Alton, IL (Madison County). They work in both Illinois and Missouri with the goal of conserving land along the Mississippi, Illinois, and Missouri rivers. They conserve land through land donation, bargain sales, and easements. The organization partners with multiple entities, such as private citizens and land owners, Illinois Department of Natural Resources, Illinois Environmental Protection Agency, Illinois-American Water Company, and many others. Projects by the GRLT include restoring historic sites, providing public access to open space through the creation of parks, and creating preserves for endangered species and unique geological (i.e., bluff) communities. The mission of Great Rivers Land Trust is to “promote the preservation and improvement of natural resources principally in, but not limited to, the watershed of the Mississippi River for the benefit of the general public.”

The Confluence This past partnership overarching vision was to reconnect people to the rivers through conservation, recreation and heritage. The project included planning, development, and programming within the designated 200 square mile project area that includes five counties in Illinois and Missouri. Planning efforts included the preparation of a master plan, a feasibility study for a National Heritage Area designation, and a 2010 Strategic Plan update. The Confluence Master Plan
identified a system of riverfront parks, open space conservation areas and trails connecting the region’s diverse cultural, historic and natural resources centered on the confluence of the Mississippi and Missouri Rivers.

**The Nature Institute**, situated just north of Alton, in Godfrey, Illinois has a mission “to foster an awareness and appreciation of the natural world through preservation, restoration, and education.” The Nature Institute staff and volunteers protect and steward significant lands along the Mississippi River in Godfrey. In addition, they work with surrounding municipalities to ensure the proper stewardship of nature resources is occurring throughout their greater area. The Nature Institute uses its own and other nearby protected open spaces to host a variety of events aimed at raising public awareness of open space and ecological values.

**Clifftop Alliance** (which is an acronym that stands for Conserving Lands In Farm, Forest, Talus, Or Prairie) was founded in 2006 to provide public outreach, land protection, and land stewardship in the bluff lands along the Mississippi River in St. Clair, Madison, and Monroe counties in Illinois. Clifftop works with many partners on projects that are mutually beneficial to the bluff ecosystems in Southwestern Illinois, such as the Audubon Society, Nature Preserves Commission, Southwestern Illinois College, University of Illinois Extension, and others.

This “grassroots, no-frills, bare-bones, nonprofit, nonpartisan, organization of volunteers is an alliance and fusion-center that serves as a clearinghouse. We work with county, state, federal and non-governmental agencies and partner to bring landholders and area residents the requisite technical, educational, and financial tools to slow or stem threats to our bluff lands and keep them productive, healthy, and beautiful.”

**Madison County**, Illinois is currently undergoing a Comprehensive Plan update, their first Sustainability Plan, Countywide Stormwater Plan and multiple watershed planning efforts. Madison County is highly active in the region in integrating sustainability into their everyday work including their Green Schools Program. This has been achieved by realizing and spreading awareness of the economic value many sustainability initiatives achieve. They work with communities on programming, open space, park and trail initiatives through their MEPRD revenue through their PEP Committee and grants. They foster support for Madison County Transit’s trail system. In addition to recycling and green schools, Madison County has had a presence at numerous environmental-related events throughout the County. The annual Air Forum is one example of the county’s commitment to sustainability as a way of bringing better health and quality of life to its residents.
St Clair County is the second county to have passed Prop P in 2000. Their budget from tax revenue through MEPRD provides a budget for parks and green space monies. Additionally, St. Clair County Greenspace Foundation is an all-volunteer, Board directed, not-for-profit land trust in St. Clair County. The group owns and stewards over 60 acres of land that overlooks the St. Louis, Missouri skyline. Their mission is to “recognize the natural heritage of St. Clair County through preservation of forests, wetlands, and prairies for land conservation, education, and recreation.” They use their own and nearby protected open spaces to host a variety of events aimed at raising public awareness of open space and ecological values.

Metro East Park and Recreation District (MEPRD) was formed by voters and is responsible for improving parks and developing trails. Their mission has its primary duty the development, operation, and maintenance of a public system of interconnecting trails and parks throughout the counties comprising the district, Madison and St. Clair Counties in Illinois. MEPRD partners with local governments, special districts, and other jurisdictions who are engaged in the construction and management of park, trail and recreation projects. As of late 2016 serving over half a million residents. MEPRD has 130 projects and growing totaling over $102 million with MEPRD contributing $19 million to date.

The Middle Mississippi River Partnership (MMRP) is a collaboration of twenty-one federal/state agencies and not-for-profit organizations that have a common goal of restoring and enhancing the natural resources of the river corridor from St. Louis, Missouri to Cairo, Illinois, a distance of 195 miles.

MCT, IDOT, IDNR: REGIONAL, STATE, MULTISTATE TRAILS AND TRAILS

The Connect People & Places Illinois offers a remarkable variety of bike trails, providing countless opportunities to experience the state’s diverse natural resources and communities. Trails offer Illinois’ citizens and visitors an enjoyable way to contribute to their health and physical fitness. In addition to the bike trails shown in this brochure, five miles or greater, many communities provide multipurpose paths, bike lanes and designated bike routes on streets.

The Route 66 Trail combines sections of Historic Route 66, nearby roads, and off-road trails for bicyclists and other non-motorized travelers. From Chicago to St. Louis, over 400 miles are available along three historic road alignments.

The Grand Illinois Trail is a 500-mile loop of off-road trails and on-road bicycle routes, joined together across northern Illinois, stretching from Lake Michigan to the Mississippi River. Metropolitan areas, rural small towns, historic landmarks, and scenic landscapes and parks are woven together by the Grand Illinois Trail, offering a
The Mississippi River Trail (MRT) from Minnesota to the Gulf of Mexico offers approximately 3,000 miles of on-road and bike/pedestrian pathways for the recreational enjoyment, health, conservation, and tourism development of river communities, river states, and the nation. The MRT in Illinois offers 585 miles. At times, it crosses with the Great River Road.

Stretching across more than 6,800 miles and 15 states, The America Discovery Trail is the only coast-to-coast, non-motorized recreational trail. Linking communities, cities, parks and wilderness, the American Discovery Trail allows people to hike, bike or ride horses for an afternoon or a cross-country adventure. The ADT has a northern and southern section in Illinois. It is a part of the TransAmerica Bicycle Trail, a 4000 mile transcontinental bicycle touring route.
ASSETS

ASSETS AND CONDITIONS

In addition to the Existing Conditions Report created in 2013 as a basis for this framework, the following sources were assembled: OneSTL Regional Sustainability Plan, East-West Gateway Map Library, and MEPRED’s Long Range Plan 2011, The Mounds – America’s First Cities, and the individual watershed planning documents. When possible updates were created or accessed through the partners’ websites.

Maps of ecological assets were created for each of the seven counties in the HeartLands Conservancy primary service region. For the Green Infrastructure Framework – Metro-East, we are displaying Madison and St. Clair Counties. The data sets and layers curated and displayed on the maps are as follows:

Ecological Assets include public open space under (1) Federal (e.g., US Army Corps of Engineers, US Fish & Wildlife, US Forest Service, etc. sites), (2) State (e.g., Illinois or Missouri Dept. of Natural Resources and MO Dept. of Conservation lands), (3) County/ Municipal (e.g., County, City, and Village Parks and green spaces), and (4) Non Profit (e.g., conservation easements & nature preserves) ownership. State-listed nature preserve sites are high-quality natural areas and endangered/threatened species habitat also included in ‘ecological assets’. Private Open Space too is featured on the map and included in analysis: private golf courses, ball fields, etc. Also included are Illinois Natural Area Inventory (INAI) sites; properties surveyed for the purpose of cataloging Illinois flora & fauna.

Land cover data described below, is derived from a 2000 shapefile. Using Arc GIS, selections were made to determine overall composition of the Southwestern Illinois regions, and individual counties. This data is to be used for illustrative and generalized purposes as it is not the most up-to-date, highly specific information. However, it does provide a catalyst for determining county’s and the region’s composition and from there making recommendations to protect and enhance green infrastructure.

Data used to illustrate recreation resources, includes East-West Gateway Open Space, a trails shapefile that has been maintained for years by HeartLands Conservancy, publicly accessible lands, and county, township, and/or municipal parks and trails, where data was available to display these items.

Water resources help us to understand the interconnectedness of our region. Watersheds are demarcated by yellow lines, streams in blue, and impaired waterways (low water quality) in red. These maps illustrate that water resources (and the subsequent benefits and challenges of water bodies) are shared among numerous municipalities, counties, even states. Wetlands areas are also shaded, illustrating the potential for wetland conservation or restoration throughout the region.

Prime farmland assets are land which have the best combination of physical and chemical characteristics for the production of crops. It has the soil quality, growing
season, and moisture supply needed to produce sustained high yields of crops when treated and managed, including water management, according to current farming methods. Prime Farmland must have been used for the production of irrigated crops at some time during the two update cycles prior to the mapping date. It does not include publicly owned lands for which there is an adopted policy preventing agricultural use.

**Ecological Assets**

**Madison County**

In Madison County, state and federal lands are prominent along the Mississippi River, the county’s western boundary. Choteau Island and other major land complexes are protected along the river by US Army Corps of Engineers (USACE) and Illinois Department of Natural Resources (IDNR) and Missouri entities on the Missouri side of the river. The northwestern portion of the county has many ecological assets ranging from nature preserves, to land conservancy (i.e., the Nature Institute), to city parks (e.g., Alton has over a dozen small to large sized parks). Edwardsville also has an extensive park network and is the hub for many long-distance (former rail lines) bike trails that extend further into the eastern part of Madison County. Horseshoe Lake also garners a sizable amount of state-protected land. Other major hubs could include Tri City Park in Troy, the lands protected around Highland/Silver Lake, and the protected lands associated with Cahokia Mounds State Historic Site (west of Collinsville).

**St. Clair County**

St. Clair County ecological assets are primarily contained within county and municipal parks. Belleville, O’Fallon, Fairview Heights, Shiloh and Swansea also bolster park systems. In addition, some sizeable (e.g. 100 acre) blocks of privately protected open space also exist throughout St. Clair County. An INAI site covers a large area around Stemler Cave (west of Millstadt). State protected lands buffer the Kaskasia River from Fayetteville south to Baldwin Lake (south of New Athens). State protected lands also include Cahokia Mounds State Historic Site and Frank Holten State Park, which is particular importance because of its placement within a largely urbanized area (between Washington Park and Alorton). Little state or federally protected lands exist along the St. Clair County – Mississippi River edge.

**Land Cover Assets**

**Madison County**

High and low density urban land cover is concentrated in the western part of the county and includes major cities such as Alton, Edwardsville, Granite City, and Collinsville. Smaller municipalities are scattered among the middle and eastern
Public Open Space - State: Illinois or Missouri Dept. of Natural Resources, MO Dept. of Conservation
Public Open Space - Non Profit, Other: conservation easements & owned lands non profits
Public Open Space - County, Municipal: County, City, and Village Parks and green spaces
Private Open Space: Private golf courses, ball fields, sportsman's clubs, etc.
Natural Area Inventory Sites: Properties surveyed for the purpose of cataloging Illinois flora & fauna
Nature Preserves: High-quality natural areas and endangered/threatened species habitat
Bodies of Water: Streams
Metro Link
Municipal Boundaries
Madison County Ecological Assets
portions of the county, and round out the 21% of the county which is defined as urban land cover. Urban grasslands (urban parks) make up only 3% of the county and serve as open spaces in the more urban pockets.

Open water is 3% of the total land cover in Madison County. Major surface waters include Horseshoe Lake, Holiday Shores, and Highland/Silver Lake. In addition to these water bodies, Madison County also features many streams (e.g. Silver Creek) and is bordered on the western side by the Mississippi River. Wetlands contribute to 4% of the total land cover. Wetlands are concentrated around Horseshoe Lake and throughout the “American Bottom” floodplains of the Mississippi River along the western portion of the county.

Agricultural lands constitute 40% of land cover in Madison County, mimicking the state where nearly half of the land is dedicated to farming or ranching. Agricultural land cover dominates the eastern portion of the county, although there is significant portions of agricultural land cover within the American Bottom, among the urban and water/wetland land cover.

Rural grasslands or open space make up 17% of the land cover and represent plant communities that are neither forest or agricultural. These areas exist mostly at the fringe or edge of where forest and agricultural lands meet.

Forest land cover, 12% of the county’s total land cover, is most prevalent in the northern and middle portions of the county. Forest land cover is heavily associated with the County’s stream, with forests being the most common land use adjacent to streams in the county. Forest land cover, logically, is less prevalent in the urban land cover areas, and – unfortunately is under represented in the American Bottom.

**ST. CLAIR COUNTY**

Urban areas compose 12% of St. Clair County’s total land cover. Comparatively, the densest urban areas are situated directly east of St. Louis City and includes Fairmont City, East St. Louis, and Cahokia closest to the Mississippi River and Fairview Heights, O’Fallon, and Belleville further east. Smaller municipalities are located in the eastern and southern portion of the county (e.g., Mascoutah, Freeburg, New Athens, and Marissa).

Open water accounts for 1% of the total land cover – much of this can be attributed to the Kaskaskia River which meanders through the southeast part of St. Clair County. Wetlands account for another 3% of total land cover. Wetlands occur both north and south of the Kaskaskia River (some adjacent to the river also) with the heaviest concentration of wetlands occurring in the southeastern most corner just outside of Marissa city limits.

Agriculture dominates land cover. St. Clair County is defined as having 57%
agricultural land cover. Some agricultural land cover exists in the fertile “American Bottom,” Mississippi floodplain, intermixed with the more urbanized western portion of the county. However, agricultural land cover is much more prominent in the less-densely populated eastern and southern portions of the county.

Rural grasslands and forest land cover, together, comprise 25% of the total land cover for St. Clair County. Forested areas occur just east of the American Bottom, on — most likely — bluffs that make development of agriculture difficult. Forest and grassland land cover is also prevalent along both smaller tributaries and major waterways — especially Silver Creek running north to south and along the Kaskaskia River running east to west.

**Recreation Assets**

**Madison County**

Madison County public recreation lands are largely centered on the Mississippi River, Horseshoe Lake and Cahokia Mounds may also be considered recreation nodes. An extensive trail networks also exists for recreation in Madison County. Trails run along the Mississippi River along the entire western boundary of the county. Numerous trails also form a network with Edwardsville and Glen Carbon at the center. Trails connect more urban areas with some of the larger blocks of public recreation lands. One trail even connects Madison County with Missouri, across the Mississippi River.

**St. Clair County**

St. Clair County public recreation nodes may be Cahokia Mounds State Historic Site, Frank Holten State Park and public land along the Kaskaskia River. Belleville has a wide network of trails that extend north, south, east, and west connecting many of the nearby municipalities. Swansea has a number of planned trails that will complement the existing trail network. O’Fallon features a large block of public recreation land with a trail loop for public recreation. Other large public recreation
Madison County Recreation Assets

Legend
- Nat. Brk.
- Park
- Rec. Area
- Rec. Center
- Rec. Park
- Rec. Trail
- Rec. Area
- Nat. Brk.
- Municipal Branch

St. Clair County Recreation Assets

Legend
- Nat. Brk.
- Park
- Rec. Area
- Rec. Center
- Rec. Park
- Rec. Trail
- Rec. Area
- Nat. Brk.
- Municipal Branch
WATER ASSETS

Sound environmental policies and practices are best analyzed and implemented at a watershed scale. The hydrology of an area influences many aspects of our region’s natural, cultural and historical resources, from agriculture and food production to recreation and open space. HeartLands Conservancy has worked extensively in the Kaskaskia River Watershed to identify restoration projects of high importance, tackled the issue of future water supplies, and analyzed historical land use changes.

MADISON COUNTY

Madison County water resources include number 303d impaired waterways. Impaired waterways in Madison County include Sugar Creek and Silver Creek, among others. All of the watersheds eventually drain to the Mississippi River, and many Madison County streams flow directly into the Mississippi River. The 100 Year flood zone in Madison County is associated with larger streams and also in the American Bottom, adjacent to the Mississippi River where seasonal flooding occurs regularly.

ST. CLAIR COUNTY

St Clair County is covered by large expanses of 100 year flood zone. Flood zones exist in the American Bottom (western portion of the county), along Silver Creek and the Kaskaskia River in the eastern portion of the county, and along Richland Creek in the center part of the county. Impaired waterways include the Kaskaskia River and Richland Creek along with other, smaller segments of streams.
Madison County Water Resources

Vegetated Wetland types include:
• Bottomland Forest
• Deep Marsh
• Perennial Wetland
• Shallow Marsh
• Wet Meadow
• Shrub-Scrub Wetland
• Swamp

Open Water Wetland includes:
• Limnetic Lake
• Littoral Lake
• Littoral Shore

as defined by the National Wetlands Inventory (NWI).

St. Clair County Water Resources

Vegetated Wetland types include:
• Bottomland Forest
• Deep Marsh
• Perennial Wetland
• Shallow Marsh
• Wet Meadow
• Shrub-Scrub Wetland
• Swamp

Open Water Wetland includes:
• Limnetic Lake
• Littoral Lake
• Littoral Shore

as defined by the National Wetlands Inventory (NWI).
**Planning Process**

Since its original completion adjustments and edits have been made to the Existing Conditions Report. Elements of Existing Green Infrastructure Assets are existing plans and initiatives, existing threats, and existing land use. Existing plans and initiatives reveals other key entities planning green infrastructure in the region. Existing threats reveal strategic challenges in the development of our green infrastructure. Lastly, current land use data (combined in a few maps here and later in the document) provides analytical base in accessing resources, connectivity, and opportunities in each county. In addition to historic data, regional maps, and input, these existing conditions developed a foundation for green infrastructure recommendations for conservation and enhancement of natural resources.

**Base Data Collection**

After researching precedents, engaging organizations and peer reviews, the project team developed a model for the Green Infrastructure Framework for Metro-East based on the McHenry County, Illinois’ plan.

Next the team set forth to create an inventory of existing ecological, aquatic, cultural and farmland assets in the two-county project area. Examples of data sets that were included consist of the following:

- Streams and lakes
- FEMA Floodplains
- Wetlands from the National Wetlands Inventory
- Illinois Natural Area Inventory (INAI) sites
- Public Open Space - East-West Gateway Council of Governments
- National Land Cover Dataset
- Trails from Metro East Park and Recreation District and HeartLands Conservancy
- Culturally Significant Sites/Mound Complexes from HeartLands Conservancy

**Mapping Principles for Green Infrastructure**

After the region’s assets were mapped [maps are in the previous pages of this document], the project team developed a set of mapping principles for green infrastructure that have been widely supported in Illinois and the United States. The principles include:

- Protect large cores (cores are clusters of ecologically important areas that serve as the backbone of the green infrastructure network),
- Link core areas via corridors, or landscapes,
• **Energy Savings**: GI can save energy and money by cooling urban environments. For example, a 10% increase in tree vegetation can provide a temperature reduction of up to 0.7 °F. In addition, green roofs can reduce energy demands in buildings by as much as 0.4 kWh of electricity per square foot and 123 MMBtu per building. These energy reductions lower costs, air pollution, and greenhouse gas emissions.

• **Environmental Justice**: GI produces the benefits noted above in dense urban areas—many of which suffer from among the worst environmental pollution and disinvestment in the U.S. In addition, recent studies demonstrate that green spaces reduce crime and violence while improving sense of community.

• **Climate Change Resilience**: GI improves the ability of communities to respond to flooding and other impacts of climate change. It also recharges groundwater—an important tactic in areas that will face increased drought conditions as a result of climate change.

• Protect complexes of natural and cultural resource areas, and
• Buffer sensitive/critical areas from land use conflicts.

### Defining Green Infrastructure Components and Scale

We further defined the scalability of green infrastructure into typological network to expand and link existing and new resources. This network is made up of conserved natural areas, public and private conservation lands; farm land of conservation value; and other protected opens spaces. The network consists of cores, buffers, corridors, and other sites. The connectivity and typology network chosen help define, direct and coordinate acquisition, restoration, and management efforts.

• **Cores** are the anchors of the green infrastructure network and provide space for native plants and animals. They are clusters of ecologically important areas that often provide scenic views, promoting a sense of place and community identity.

• **Buffers** are needed to protect the periphery of cores and other critical resources. They reflect the sensitivity of resources and open spaces to adjacent land uses. Often used as conservation easements, hedgerows, visual/physical barriers, these may be used on core edges, as a demarcation of land use change, and riparian edges for waterways and wetlands.

• **Corridors** connect cores and tie the system together at regional, community or site scale. These links help maintain biodiversity and water quality, enhance migration paths for wildlife, provide stormwater management, and serve as the foundation for smart growth. Corridors can provide bicycle and pedestrian trail access, as well as filters for pollution. Corridors can also help reduce noise, reduce air pollution, moderate summer heat and wind, and accommodate stormwater flows. They also link important destinations in the area, such as neighborhoods, shopping, schools, parks, jobs, and transit.

• **Other Sites** may contribute to regional ecological and social values, but may not necessarily be attached to the network. Examples include cemeteries, community gardens, neighborhood and pocket parks, right-of-ways, institutions campuses, working farms, waterways and seasonal wetlands.

Also, following the model of McHenry County, the project team decided that because this project focuses on such a large two-county scale, that small, isolated resource areas should not always be included at this time, if they cannot be linked through any means. Although these areas may still be important for protection, leaving them out of the plan will help strengthen planning focus on creating an interconnected network. These smaller, isolated resource areas may be addressed through more detailed planning when appropriate, or encouraged to voluntarily participate through programs.
ONESTL Regional Sustainability Plan

Community Goal

Riverbend (Madison County):

A community... connected through all modes of transportation, methods of communication, and manners of cooperation.

...that values and preserves its heritage and natural resources.

...with a wide range of choices including housing, shopping, recreating, working, and travelling.

...free from crime, flooded streets, air pollution, and unclean water.

Tri-City (Madison County)

A community... that is connected to its neighbors and the region through a transportation system accessible by everyone.

...with a wide range of choices including housing, shopping, recreating, and employment.

...that utilizes existing assets and works together to create new ones.

...with access to abundant and clean parks and natural areas.

...without environmental hazards such as flooding, water pollution, and air pollution.

The following natural resource data layers were used to determine “cores”:

- Open Space mapping from East-West Gateway Council of Governments, and supplemented with HeartLands Conservancy’s open space data (athletic fields, golf courses, and open spaces under 5 acres were not included);
- Land Trust holdings and conservation easements;
- FEMA 100-Year Flood Hazard Areas;
- Pre-Settlement Land Cover/MoRAP Ecological Significance Mapping Forest Blocks of 10 acres or more;
- IDNR Nature Preserves, Sites/Trails, and Land and Water Reserves;
- INAI Sites;
- Wetlands;
- Water Resources - Lakes and ponds or 10 acres of more, rivers, creeks, aquifer recharge areas; and
- Mississippian Mounds Complexes.

Around each core, buffers were applied based on the sensitivity of each critical area. Buffers signify that not only is it important to protect critical resources, it is also important to be sensitive to activities and land uses adjacent to these areas.

- Open Spaces - no buffer
- Land Trust Holdings and Conservation Easements - no buffer
- FEMA 100-Year Flood Hazard Areas – no buffer
- Forest Blocks of 10 acres or more - 200 Feet
- IDNR Sites, Preserve/Reserves -200 Feet
- Wetlands - 300 Feet
- Water Resources - 200 Feet (non-urban), 50 -100 feet (urban)
- INAI Sites - 300 Feet
- Mississippian Mounds Complexes – 300 feet

Additional green infrastructure supporting data layers were used on a case-by-case basis to inform decisions about green infrastructure and connectivity:

- Hydric, highly erodible, and prime/important farmland soils
- Aquifer recharge areas
- East St. Louis & Vicinity Illinois Ecosystem Restoration Project Recommendations
Belleville-Swansea (St. Clair County):

- A community …with a wide range of options for housing, employment, shopping, and services.
- …connected through a safe and robust transportation network that can be used by anyone walking, biking, driving, or taking transit.
- …where residents, businesses, and government all take an active role in community improvement through communication, involvement, and responsibility.
- …that values its heritage and history and works to maintain its existing neighborhoods.

- Evaluation of Ecosystem Restoration Options for the Middle Mississippi River Regional Corridor
- East West Gateway Council of Governments Data and Map collection
- Watershed boundaries and plans
- Water supply protection area
- Cemeteries
- High Priority Farmland
- 500 Year Flood Zone
- Network barriers – interstates, rivers, highly urbanized areas, airports, railroad tracks
- Local, State, and National Trails
- National Registered Sites and Cultural Resources

Additional dimensions considered to create a **finer scale analysis**:

- Zoning,
- Comprehensive Plan
- Future Land Use,
- Major Employment Areas
- Economically Important Areas,
- Environmental Justice Areas
- Access to Healthy Food
Belleville-Swansea (St. Clair County):
- A community ...with a wide range of options for housing, employment, shopping, and services.
...connected through a safe and robust transportation network that can be used by anyone walking, biking, driving, or taking transit.
...where residents, businesses, and government all take an active role in community improvement through communication, involvement, and responsibility.
...that values its heritage and history and works to maintain its existing neighborhoods.

In an effort to more thoroughly examine the fundamental issues of the study – while fully considering the larger area’s dynamics – the geographic boundaries of the study area were set to embrace gateways and potential linkages to resources. This approach begins to account for the day trippers, residents and commuters. The project team prepared a base level of information in order to prepare a basic layout of all existing resources, facilities and trails.

Following an initial inventory of existing conditions study that was completed earlier, additional GIS layers were added for trails, Federal and State Lands, natural resource areas, farmland, tree cover, and key cultural and community assets. This broad analysis provides the next level of information of the infrastructure and needs, the analysis of the general context area provides a perspective as to the scale and location of the counties in relation to the region and Illinois’ open space network.

Demographic and population gain/loss trends were reviewed. It is important to identify where growth is anticipated for the purpose of locating future recreation, trails, resource protection and for prioritizing future projects. This will help to determine amenities and acreage necessary to meet the coming demand.

The maps highlight primary natural amenities, and primary transportation routes that connect key points of interest and economic centers; communities and relevant connections to adjacent counties; the regional network of trails; political boundaries; and relevant recreational resources.

Natural resource gap analysis of the project area takes into consideration and review of the following: points of interest, trails, municipalities, vegetation, wetlands, forest, agriculture, land use, hydrology, public lands, landform, and access/circulation.

<table>
<thead>
<tr>
<th>Geographic Area</th>
<th>Population</th>
<th>Housing Units</th>
<th>Area in square miles</th>
<th>Density per square mile of land area</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Total Area</td>
<td>Water Area</td>
</tr>
<tr>
<td>Madison County Census 2010</td>
<td>269,282</td>
<td>117,106</td>
<td>740.56</td>
<td>24.98</td>
</tr>
<tr>
<td>St. Clair County Census 2010</td>
<td>270,056</td>
<td>116,249</td>
<td>674.03</td>
<td>16.27</td>
</tr>
</tbody>
</table>
The Green Infrastructure Framework and resultants provide a quantitative and somewhat qualitative base line of the Metro East. The calculated acreage of forests, prime farmland, core areas, wetlands, and water ways will be a no-net-loss quantity by which to measure future conservation, restoration, and acquisition. Heartland Conservancy and collaborative partners’ work will ensure these numbers do not decrease., and in a best case scenario increase. Priorities will be developed as opportunities arise.

The following our current findings. These will fluctuate in actual implementation. The calculations of how many acres of natural area would be added by creating buffers and also how many acres of land are currently protected via easements, & public ownership.

- 198,637 acres of prime farmland (to conserve) 21.9% of total area
- 87,913 acres of forest (to conserve) 9.7% of total area
- Adding a 200ft buffer to all forest cores will add 107,940 acres of forest. 11.9% of total area
- 143,963 acres of core areas (existing and newly expanded) 15.9% of total area
- 283 acres/miles total = newly buffered existing trails
- 129 miles of planned trail
- 3,246 acres/miles of buffered waterways/streams
- 387,040 acres of core wetland/connectors 42.7 % of total area if fully implemented
- The 300ft buffer around all wetlands will create 84,121 acres of additional riparian zone which would equal 471,161 or 52% of total area
- 3,409 acres of impaired lakes total 12.9 % of total (excludes area of impaired streams)
- All the mounds buffered and in public/private protection would be 4795 acres (This included the entire Cahokia Mounds Historic Site and all others buffered.)
IMPLEMENTATION STRATEGY

Throughout our regional planning and implementation efforts, we have developed a shared Next Steps Strategy as follows. As the initiative evolves and grows, steps and recommendations will be modified to produce the highest value and most productive result. It is an optimistic, yet pragmatic approach. The success relies on the continuing development of partnerships, the dedication human capital and development of financial resources to the project, and the support and commitment of many jurisdictions and local authorities. Above all, it hinges on the good will, involvement and investments of regional residents, regardless of age, race or economic status.

The most successful implementation strategies builds upon existing investments, ongoing efforts of partners and collaborating agencies. They may participate in various roles, as their missions, constituents, and funding allows.

These roles are: To LEAD the development process of particular initiatives; To FOSTER and FACILITATE collaboration by identifying and soliciting the participation of organizations and agencies; To SECURE and LEVERAGE RESOURCES, including institutional knowledge, human/social capital, financial support for implementing initiatives; and most importantly, in building consensus, coordination and support for projects of shared importance, which necessarily transcend political and geographic boundaries. In this last role lies one of the principal strengths of Southern Illinois. Initiatives such as this framework have the capacity to bring together public agencies at local, state and national levels that rarely, if ever, have opportunities to collaborate.

Land agreements and acquisition for the green infrastructure framework needs to be a priority and secured as opportunity arises. It is very difficult and expensive to attempt to acquire land for greenspace, trails, and parks after development has occurred. Large parcels are almost impossible to acquire in a developed area. Purchases of land for park and open space should be secured well before there is a crisis or lack of space for the needs of the community. The parcels identified in this report provide for a multitude of purposes that include active and passive parks, natural areas, reduce flooding, improve water quality and connect corridors.

The most critical immediate need is often due to development pressure, water-based storm events, and life-safety issues that will bring need to the forefront. In order to achieve the protection of resources for the future, the partners will need to first make a realistic estimate of open space acquisition on an on-going basis.

Recommendations following this section demonstrates the many levels of collaboration possible for partners of an effort this quality and size. The range is flexible and scalable. Each may choose their own role in each action item. For example, as the framework grows, HeartLands has a unique ability to operate as a land trust. This role could provide services to annually prioritize parcel acquisition, based on funding and needs, and negotiate agreements on desired parcels, partnerships, and policies. Land trusts can often negotiate bargain sales, and 1031 exchanges, as well as hold conservation easements on properties that partnering agencies and organizations acquire. Having a land trust hold title to the property for a period of time may also assist in maximizing public funding opportunities.
Lots of Love

Conservation

Memories

Special Events

Native Plantings

Engage

Outdoor Classrooms

Trails

Transit

Partnerships

Protection

Stewardship
The Green Infrastructure Framework for Southern Illinois
Volume 1: Metro East [Madison and St. Clair Counties, Illinois]
The Green Infrastructure Framework for Southern Illinois
Volume 1: Metro East [Madison and St. Clair Counties, Illinois]
RECOMMENDATIONS

Recommendations have been developed into Policies, Projects, Programs, and Priorities. These are structured to build upon existing investments and efforts by the partnering organizations and are organized as such. Many of these overlap and will be clarified by the more detailed plans that are developed.

It must be noted that the following implementation strategy is dependent on additional partnerships being developed, appropriate human and financial resources being found/dedicated, and the support and commitment of a great number of communities, jurisdictions, agencies, and local authorities. The following strategy is achievable yet challenging.

The action verbs used are defined below for reference:

**Design|Develop|Acquire|Complete|Investigate|Establish|Provide|Conduct|Continue**

It is the responsibility of HeartLands Conservancy to conceptualize, create, fundraise, operate, manage and/or implement. This implies that partners will take responsibility for aspects of the framework that relate to their stated mission and goals.

**Facilitate/Foster**

It is the responsibility of HeartLands Conservancy bring the necessary parties together and start the process, program or project. Others will implement after the project or program is conceptualized.

**Encourage/Support**

Others have the responsibility and HeartLands Conservancy is a vocal supporter. Support can be organizational, technical, marketing, and/or financial.
POLICIES:

• Approve and adopt the Green Infrastructure Framework.
• Protect and enhance open space and green infrastructure supporting the goals of this framework, HeartLands’ Strategic Plan, EWG Long-range Goals, and the MEPRD Long-range Plan.
• Coordinate with stakeholders, partners, townships, counties, municipalities and park districts to strategically provide public access, education and resource protection for the network.
• Encourage the coordinated implementation of the natural resource plans, township, park district and other open space plans (Chouteau Island Master Plan, American Bottom Ecosystem Natural Resource Study, East St. Louis and Vicinity Ecosystem Restoration study).
• Develop and incrementally implement proposed projects and cores identified and leverage for environmental, livability, educational and economic benefits.
• Continue to partner with multiple jurisdictions, not-for-profits, and organizations in order to develop, update and implement watershed-based plans in Southern Illinois.
• Incorporate conservation, green infrastructure, and sustainability criteria in smart growth development and county ordinances to protect natural, scenic, historic, archaeological and environmental areas when making land use and development decisions.
• Develop and support national, regional, county, and local neighborhood bicycle and pedestrian plans to encourage walking and biking linking economic centers, jobs, schools, food resources.
• Explore innovative opportunities to collaborate on the protection and enhancement of green infrastructure connectivity to schools, job centers, neighborhoods, and cultural resources.
• Encourage the increased use of unique acquisition initiatives, as well as non-acquisition techniques such as conservation easements, tax initiatives, and dedication as alternative methods for implementing local, county and regional open space plans.
• Grow stewardship to collaborate, partner, and leverage resources for the procurement, maintenance, and future implementation of this framework.
• Develop Design and Retrofit Manual for best practices for existing neighborhoods and grey infrastructure.
• Encourage communities to require green infrastructure approaches at the neighborhood scale, principally for new development.
• Continue to identify and acquire core areas as “priority resource protection areas”.
• Evaluate zoning, subdivision, and landscaping codes to ensure that their provisions do not discourage or prevent green infrastructure designs.
• Develop a Unified Development Ordinance and Light-Impact Development requirements for conservation development on properties to incorporate green infrastructure principles.
• Encourage green infrastructure principles and policies can be incorporated into municipal, county, and park district land use plans and ordinances.
• Update all BMP manuals, outdated materials, and SWIRC&D materials relevant to implementing and expanding Green Infrastructure Framework.
PROGRAMS

Land Conservation
- Complete acquisition and restoration of Brushy Lake Wetland Complex.
- Identify and secure open space from willing property owners that is critical to the completion of the Green Infrastructure Framework.
- Identify and secure threatened sensitive natural or cultural resources, and/or protect valuable wildlife habitat and biological diversity.
- Develop and foster a Farmland Conservation Program that identifies and secures past or present farmland from willing property owners that is critical to the protection of valuable agricultural lands.
- Facilitate, foster, support, and develop process for acquisition and protection for parcels with Mississippian Mounds.
- Acquire land along Old Cahokia Creek for stormwater management, public recreation, and protection of chorus frog and turtle habitat.

Water Quality
- Facilitate the establishment of a Riparian Edge Protection and Restoration Program to preserve high quality native vegetation and remnant natural communities along the shoreline and to develop a substantial and interconnected natural corridor along all river and stream edges as a critical component of water quality, habitat protection, wildlife corridors, visual enhancement, bank stabilization, erosion and flood control, and runoff pollutant reduction.
- Facilitate the correction of point-source water quality problems as a priority.
- Continue the development of a Wetlands Conservation, Enhancement and Expansion Program that restores existing wetlands and floodplains as well as developing a wetlands mitigation bank.
- Create naturalized stormwater detention Design Manual and/or grant-based collaborative service with local nurseries.
- Encourage municipalities to incorporate green infrastructure as a central element and policy basis for their comprehensive planning and stormwater management.
- Develop a Watershed Design Manual that includes recommendations and design criteria for best management practices to help preserve the water quality and hydrology.
- Facilitate implementation of Green Up O’Fallon.
- Encourage through social media self-installed BMP’s of stormwater practices for private property owners, including native plantings, rain gardens, vegetative buffers, drain cleaning, etc.

Cultural and Natural Resources
- Facilitate the development of a community based tree planting program for member communities and trails, and parks.
- Facilitate the development of a Native Plant Protection and Restoration Program to protect existing native flora and fauna, and natural communities, and reduces or substantially eliminate exotic plants to manageable levels, as well as to ensure a diversity of plant material within the greenway.
• Facilitate the development of an incentive-based Habitat Protection and Restoration Program that maintains existing large, intact patches of native vegetation, expands the existing types of native habitat to encourage a diversity of wildlife and fish species, and reduces or substantially eliminates exotic animals, wildlife and fish to manageable levels. Maintain connections among wildlife habitats by identifying and protecting corridors for movement.

• Facilitate the development of a program to identify, document, evaluate, and preserve and protect the significant archeological, ethnographic, natural, cultural and historic resources.

• Expand Lots of Love to school grounds, businesses, organizations, and agencies. Partner with institutions to incorporate a variety of green infrastructure demonstration techniques and volunteer opportunities.

• Encourage conservation/preservation easements, infill, and buffers at all scales on trails, streams, dry creeks, forest edges, farmland, ROWs, and public space.

• Encourage conservation/preservation easements and buffers at all scales on trails, streams, dry creeks, forest edges, farmland, ROWs, and public space.

• Foster protection of Bohm Woods and other old growth woods.

Public Events and Outreach Programs

• Develop Friends outreach strategy for Green Infrastructure Framework.

• Support Cahokia Museum Society in outreach and mounds acquisition.

• Facilitate, support and develop themes for different recreational and interpretative trails.

• Facilitate, in partnership with other jurisdictions and cities, the development of new public events and/or educational program on green infrastructure.

• Continue Green Leaf Awards.

• Support the State of Illinois Bicentennial Celebration 2018.

• Support and develop a moveable exhibit for Earhtones festival in Alton.

• Support the expansion of Eagle Days Superb Owl events.

• Support Master Naturalist Program.

• Expand The Mounds Heritage Trail north, east and west through Madison County.

• Expand NavNet program.

• Encourage residential–scale initiatives for individuals through volunteerism, beautification, education and partnerships with businesses.

• Facilitate seed save/swap/exchange.

• Continue Field to Fork Event.

• Expand and continue water, day, and evening treks.

• Recreational and Scenic Programs.

• Support public boating events, treks, and programs on the river, public waterways and lakes.

• Support the existing Bluff Conservation Programs in order to preserve important vistas and view corridors.

• Investigate the possibility of further national designation for a National Multi-state Mounds Trail along the Mississippi River corridor.
• Support linkages and connectivity to MEPRD and partnering agencies’ projects, trailheads and trails and linkages to the following trails: Glen Carbon Heritage Trail, MCT Confluence Bikeway, MCT Goshen Trail 89. MCT Nature Trail, MCT Nickel Plate Trail, MCT Quercus Grove Trail, MCT Schoolhouse Trail, MCT Watershed Trail, MetroBikeLink Trail, Metro-East Levee Trail, Rend Lake Bike Trail, and Richland Creek Bikeway Trail Greenway.

PROJECTS

Parks and Natural Resources

• Implement The Mounds – America’s First Cities Feasibility Study and Recommendations for Cahokia Mounds and all satellite sites (Dupo, Lebanon, Mitchell, St. Louis, East St. Louis, South St. Louis (Sugar Loaf Mound West)).
• Support the restoration and facilitate the expansion of Columbia Bottom.
• Support the restoration and facilitate the expansion of Piasa Park Trailhead.
• Expand the Lots of Love initiative.
• Continue to develop and complete watershed plans for Madison County.
• Facilitate watershed plans for St. Clair County and Scott AFB.
• Develop and update detailed comprehensive parks, trails, and open space plan for St. Clair County.
• Develop detailed comprehensive parks and open space plan for Madison County.

Visitor Facilities

• Develop of the new Illinois Welcome Center, interpretive complex, multi-transit trailhead, greenway trail and site improvement plan at the Old National Stockyards and East St. Louis including both sides of hwys 70 and 64/40.
• Develop the Master Plan for Englemann Farms.
• Complete the National Park Service National Designation of Cahokia Mounds State Historic Site development.
• Develop trailheads at key mounds complexes per The Mounds – America’s First Cities Feasibility Study (Dupo, Lebanon, Mitchell, St. Louis, East St. Louis, South St. Louis (Sugar Loaf Mound West)).
• Investigate visitor trailheads at Brushy Lake and Arlington Wetlands.
• Support and foster new uses for Lewis and Clark’s Hartford Tower and grounds
• Support farmers markets and CSAs in existing and new locations in Fairmont City.
• Support MEPRD’s Headquarters and Trailhead in Collinsville.
• Support and foster co-programming with Audubon’s Riverlands Center, National Great Rivers Museum, and NGRECC.
• Investigate connectivity and trailhead potential at Camp DuBois in Wood River.
Trails and Transportation

- Complete the Mounds Heritage Trail Signage of Phase 1 and Phase 2.
- Complete development of bicycle and pedestrian plans in Godfrey, Alton, and other.
- Support implementation of Edwardsville’s Parks, Open Space, & Trails Plan.
- Support the trail connections, linkages, and extensions to food, water, shops, and neighborhoods.
- Support Alton’s Park and Open Space Management Plan.
- Support transportation node in Alton for high-speed rail.
- Facilitate linkages to adjacent downtowns/communities/neighborhoods such as Roxana, Fairmont City, South Roxana, Hartford and Wood River and to other major historic/natural sites such as Great River Road, Cahokia Mounds, Fairmont City, Levee trails, MRT, Pere Marquette, and Horseshoe Lake.
- Foster the development of a water-taxi and ferry system.
- Support the connection of MEPRD and MCT trails to local municipalities.
- Develop Cemetery Tour.
- Expand The Mounds Heritage Trail north, east and west through Madison County.
- Expand The Mounds Heritage Trail east and west through St. Clair County.
- Support and facilitate Kaskaskia River Trail Implementation.

Public Art, Interpretation and Signage

- Develop The Mounds Public Art, Interpretation, and Signage Master Plan.
- Support and foster Native American Events: pow wow, art shows, etc.

PARTNERSHIPS AND PROMOTION

Collaborative Leadership and Stewardship:

- Strengthen MMRP partnership.
- Strengthen collaborative cross-programming throughout the region.
- Improve the public’s understanding and knowledge base of the nature of Southwestern Illinois.
- Expand the Board to include diverse stakeholders.
- Support professional organizations and not-for-profits that share common goals and objectives.
- Develop a “Friends” organization to provide on-going volunteer and other forms of assistance.
- Continue to facilitate the Steering and Technical Advisory Committee that reflects the broad constituent group necessary to implement a national designation of The Mounds.
- Continue to develop a small staff group that is reflective of the necessary technical, outreach and management expertise.
- Develop a HeartLands’ Education and Outreach Strategy and materials to engage individuals with nature with regional partners.
• Develop partnerships in education for immersive programming, events, and outdoor classroom.
• Develop and Facilitate the formal structure of The Mounds Collaborative Partnership Management Model.
• Explore partnerships in outreach, education, and immersive engagement with nature with non-traditional partners.
• Expand Lots of Love to include farmers market gardens (herbs, natives, milkweed), non-traditional sites, private owners, parks, non-vacant lots, right-of-ways.
• Develop urban and rural partners for tree program and branding package region-wide.

**Maintenance and Management**

• Develop a Management Plan for The Mounds with IHPA.
• Facilitate the coordination of law enforcement and emergency services.
• Develop and incorporate requirements that ensure the long-term viability, functionality, and aesthetic standards of HeartLands Conservancy’s properties.

**Marketing and Funding**

• Support the Southwestern Illinois region as a major tourist destination and recreational amenity with the protection of cultural, natural and economic resources.
• Develop a funding strategy and campaign to implement key Green Infrastructure initiatives.
• Develop a marketing program for individual projects, initiatives, and media.
• Develop a new economic benefit strategy for Green Infrastructure.
• Develop outreach program to engage those who live, work, or own property in the core areas.
• Seek collaborative grants for implementation of Green Infrastructure Framework and priority polices, programs, and projects.
FUNDING OPPORTUNITIES

FEDERAL PROGRAMS

Conservation Easements - Through the federal tax code, charitable gift and estate tax benefits exist for long-term land protection. With a conservation easement, a landowner limits future development opportunities and reduces the value of the property while ensuring long term conservation protection and receiving tax benefits. This program is administered through a local land trust.

Conservation Reserve Program (CRP) - These programs provide a cash incentive payment annually along with cost-share assistance to establish a conservation cover to convert cropland to conservation land uses. The lands are enrolled for a period of time, typically 15 years. This program is administered through USDA-Farm Service Agency with technical assistance from USDA-Natural Resources Conservation Service (NRCS) and the Illinois Department of Natural Resources (IDNR).

Conservation Reserve Enhancement Program (CREP) - is an offshoot of CRP, the country’s largest private-land conservation program. Administered by the Farm Service Agency, CREP targets high-priority conservation issues identified by local, state, or tribal governments or non-governmental organizations. In exchange for removing environmentally sensitive land from production and introducing conservation practices, farmers, ranchers, and agricultural land owners are paid an annual rental rate. Participation is voluntary, and the contract period is typically 10–15 years, along with other federal and state incentives as applicable per each CREP agreement.

Forest Legacy - This program provides a cash payment for a conservation easement on forest land or lands planted with trees. The program requires that a forest management plan be developed to manage the forest for future timber harvests and other conservation purposes. This program is provided through the US Forest Service and IDNR.

Farm and Ranchland Protection Program (FRPP) - This program is designed to protect prime farmland and farmland for future crop production in areas where there are pressures to convert that land to other uses. The program offers a partial cash payment based on the value of the land and requires a local match and a landowner donation. Administered by USDA-NRCS.

North American Wetlands Conservation Act (NAWCA) - Through NAWCA, the US Fish & Wildlife Service provides matching grants to organizations and individuals who have developed partnerships to carry out wetlands conservation projects for the benefit of wetlands-associated migratory birds and other wildlife. Grants are competitive and require a 50/50 match. Areas in this corridor would rank high for grant funds from this program.
Wetland Reserve Program (WRP) – This program provides cash payments to permanently restrict wetlands for conservation purposes. The program is administered by USDA-NRCS.

319 Program – This program is designed to improve water quality in impaired streams or watersheds. It targets non-point source pollution. To be eligible, a proposal needs to document the need for cost-share assistance and demonstrate a connection between the conservation practices proposed and the impairment. This is a 60-40% cost-share program.

Recreational Trails Program (RTP) - The federal “Recreational Trails Program” (RTP), was created through the National Recreational Trail Fund Act (NRTFA). This program provides funding assistance for acquisition, development, rehabilitation and maintenance of both motorized and non-motorized recreation trails. By law, 30% of each states’ RTP funding must be earmarked for motorized trail projects, 30% for non-motorized trail projects and the remaining 40% for multi-use (diversified) motorized and non-motorized trails or a combination of either. The RTP program can provide up to 80% federal funding on approved projects and requires a minimum 20% non-federal funding match. Program is managed by the Illinois Department of Natural Resources.

Illinois Transportation Enhancement PROGRAM (ITEP) - ITEP provides funding for community based projects that expand travel choices and enhance the transportation experience by improving the cultural, historic, aesthetic and environmental aspects of our transportation infrastructure. Project sponsors may receive up to 80 percent reimbursement for project costs. The remaining 20 percent is the responsibility of the project sponsor. Program managed by the Illinois Department of Transportation.

Illinois Green Streets Initiative - The Illinois Green Streets Initiative is part of the Replanting the Prairie State Initiative to further reduce greenhouse emissions in the state. Project sponsors may receive up to 80 percent reimbursement for project costs. The remaining 20 percent is the responsibility of the project sponsor. Funds for this program can only be used for planting of trees or prairie grasses, and the program is overseen by the Illinois Department of Transportation.

Congestion Mitigation and Air Quality Improvement Program (CMAQ) - The CMAQ program, jointly administered by the FHWA and the Federal Transit Administration (FTA), was reauthorized in 2005 under the Safe, Accountable, Flexible, and Efficient Transportation Equity Act: A Legacy for Users (SAFETEALU). The SAFETEALU CMAQ program provides over $8.6 billion dollars in funds to State DOTs, MPOs, and transit agencies to invest in projects that reduce criteria air pollutants regulated from transportation related sources over a period of five years (2005-2009). Program is overseen by the Illinois Department of Transportation.
National Scenic Byways Discretionary Grants Program – This program provides funding for byway-related projects each year, as part of the Federal Highway Administrations Discretionary Grants Program. Projects to support and enhance National Scenic Byways, All-American Roads and State-designated byways are eligible. Program is overseen by the Illinois Department of Transportation.

STATE PROGRAMS

Open Space Land Acquisition and Development (OSLAD) and Land and Water Conservation (LAWCON) – These two programs are administered by the IDNR. OSLAD is funded with Real Estate Property Transfer Tax in Illinois. LAWCON is a federal funded program from royalties from off shore oil leases. Illinois uses one application form for both programs. Both land acquisition and park developments are accepted in this program. It is a 50-50 cost share program on a reimbursable basis.

Partners in Conservation (formerly known as C-2000 now defunct) – This program assisted with conservation programs (acquisition, habitat improvement, education, resource economics, etc.). It is available through local ecosystem partnerships and the corridor is in the American Bottom Ecosystem Partnership. It is administered by IDNR with local administrative assistance being provided by HeartLands Conservancy.

Illinois Nature Preserves Commission – This agency/program is focused on high quality natural areas. There are three levels of protection. The highest level of protection supersedes any use of eminent domain. This program works directly with landowners and is strictly voluntary.

IEPA Environmental Settlements – This program is limited but can be used for a variety of conservation objectives.

Illinois Bicycle Path Grant Program – This program was created in 1990 to financially assist eligible units of government to acquire, construct, and rehabilitate public, non-motorized bicycle paths directly related to the project’s support facilities. Grants are available to any local government agency having statutory authority to acquire and develop land for public bicycle path purposes. Financial assistance up to 50% of approved project costs is available through the program. Maximum grant awards for development projects are limited to $200,000 per annual request; no maximum exists for acquisition projects. Program is managed by the Illinois Department of Natural Resources.
REGIONAL/LOCAL PROGRAMS

**Ordinances (County/Municipal)** - Protect green spaces, floodzones and wildlife habitat.

**Agricultural Areas Act** - This protection program is voluntary for agricultural producers/landowners to protect agricultural land. It is administered by the local Soil and Water Conservation District. It provides for some real estate tax benefits and is a registered farming operation that is noted on planning and zoning maps.

**Metro-East Park and Recreation District (MEPRD)** - This program is approved by voters, to collect a 1/10th sales tax for parks, open space, trails and other conservation programs. Fund divisions are determined by state statute with 50% directed to regional projects and 50% directed to county and local projects. This is an excellent source of funds for greenway corridor protection, trailhead, partner implementation, and construction.

**Private Foundations and Donors** - Foundations are excellent sources of funding for acquisition of land for conservation, interpretation, education, and project-specific purposes. Each has unique directives that may need to be matched to a specific opportunity.
HeartLands Conservancy is a nonprofit organization that works in partnership with landowners and community leaders to permanently protect the lands that we value in Southwestern Illinois—the farms, forests, wetlands, wildlife habitat, open spaces, and scenic vistas. They are dedicated to the mission of advancing the conservation of environmental resources to ensure a sustainable quality of life through two program areas of conservation of open space and fostering livable and sustainable communities. With interdisciplinary staff they can assist any project from public engagement to planning, environmental and GIS design to landscape architecture. More information is available at www.HeartLandsConservancy.org.

On the following pages there are lists of references and resources that have contributed valuable information, diagrams, and research to this booklet as well as to our region’s education and foundation in best management practices most appropriate.

- Department of Environmental Protection, Bureau of Watershed Management.
- Missouri Department of Natural Resources. Missouri Guide to Green Infrastructure. 2012
- Prince George’s County, Maryland. Department of Environmental Resources (PGDER). Larry Coff man et al. (1999). Low-Impact Development Design Strategies, An Integrated Design Approach. Published by U.S. Environmental Protection Agency,
- Seattle Public Utilities. “Natural Drainage Systems”
• Document No. EPA-841-B-00-005.
• CE News: Professional Development Series Article, Jennifer Steffens, E.I., LEED-AP, and Denise Pinto, P.E. Designing For LID: An In-depth
• Look at Integrated Management Practices and Design Considerations July, 2011
• Paper 273. Texas State University-San Marcos.

Watershed Planning & Protection

• http://www.il.nrcs.usda.gov/technical/engineer/watershed.html: USDA NRCS watershed planning case studies in Illinois
• http://cfpub.epa.gov/npdes/stormwatermonth.cfm: outreach materials and documents on stormwater management produced by USEPA NPDESThe Maschhoffs LLC