

# GI JOE

green infrastructure  
for the average joe



Zach Swanson | GI Joe | St. Michael, MN | 5572 Spring 2012 | Dominic Fischer

# GI JOE

green infrastructure  
for the average joe

Can suburban stormwater infrastructure enhance ecological functionality of a civic space rather than become an environmental liability?

# why GI?

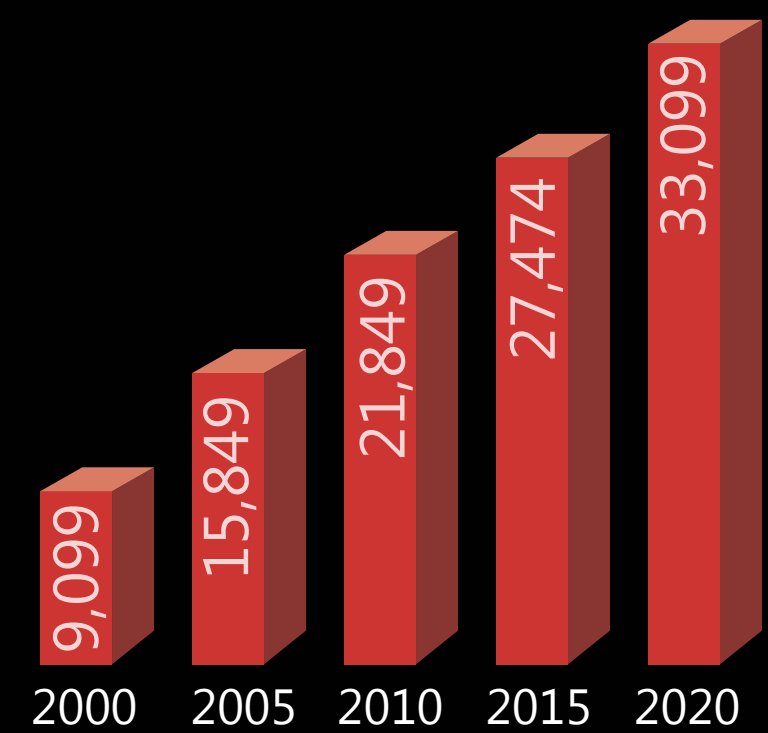
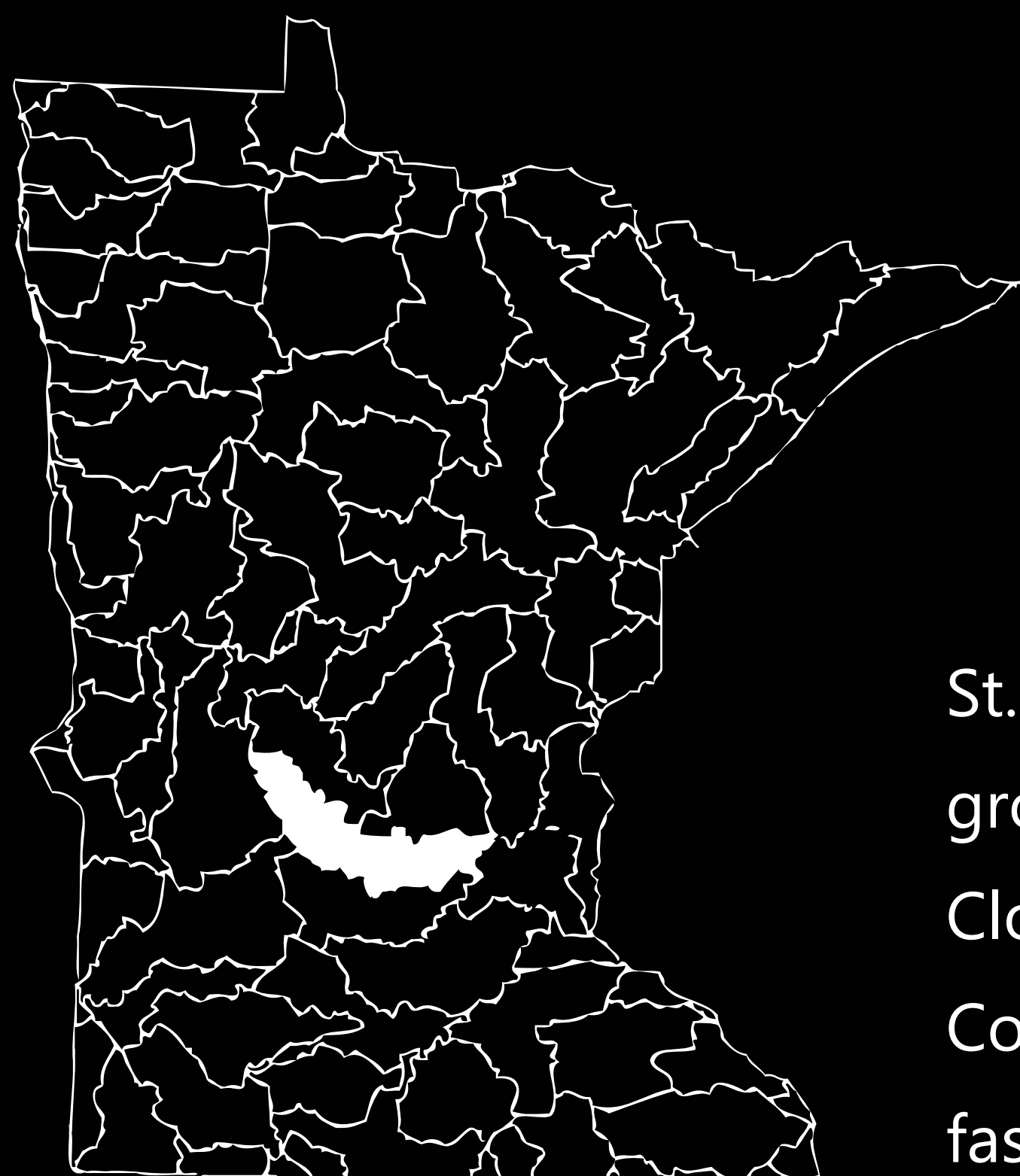
2002 study in science concluded that the demolition of habitat costs the world

**\$ 250 billion/yr**

Estimated that a network of global nature reserves would provide an annual net benefit of over

**\$ 4.4 trillion/yr**

# why St Michael?



St. Michael has experienced significant growth due to its location between St. Cloud, MN and St. Paul, MN. Wright County has emerged as one of the fastest growing counties in the state.



Metro Area Population  
150,000 to 1 million  
1 to 3 million  
3 to 6 million  
6 million +  
2008 Regional Plan Association



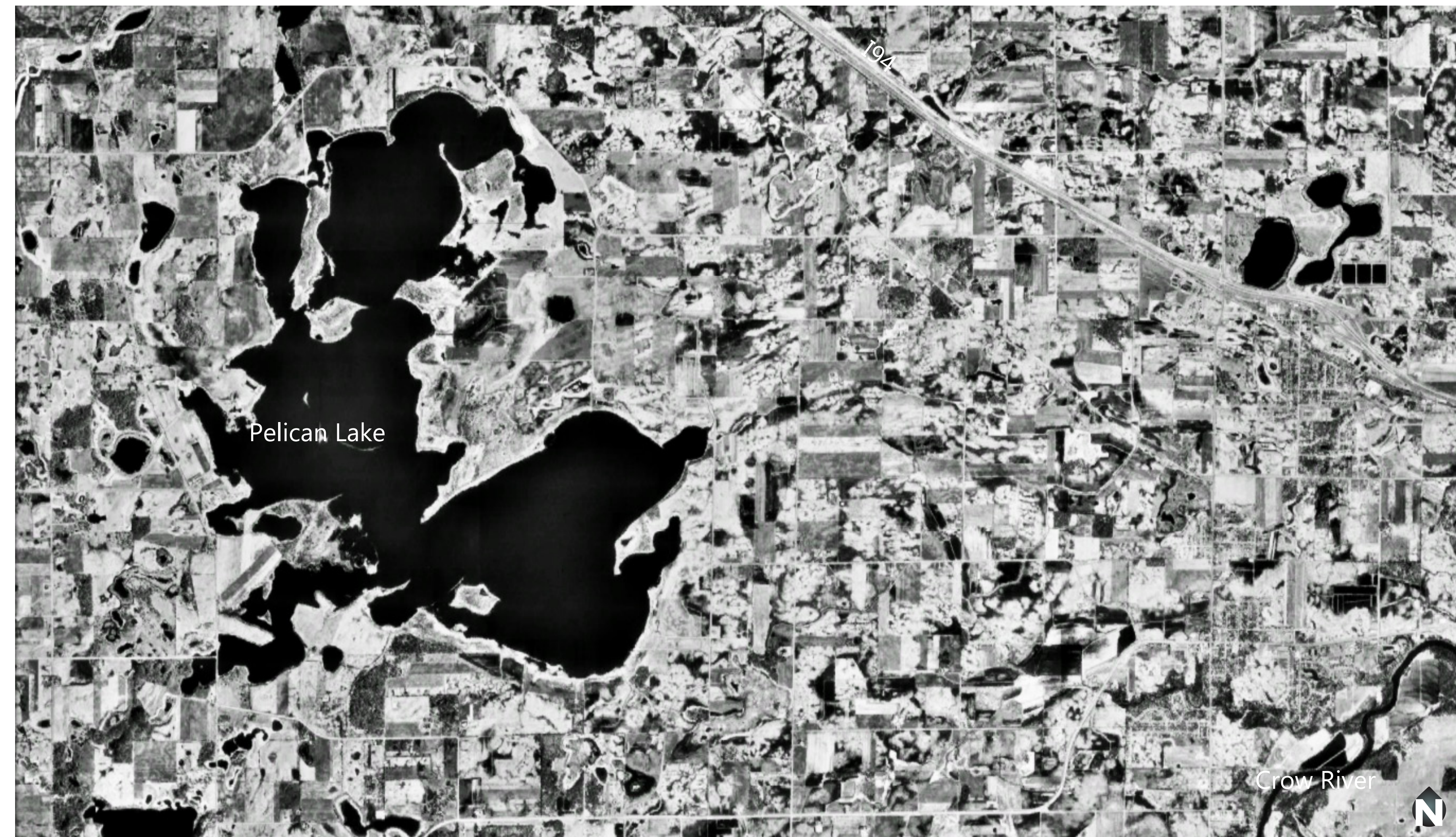
St. Michael has a small town feeling with easy access to larger city amenities and services. It is a place where neighbors know one another and one can easily become involved in the community. We are caretakers of our environment, protecting and preserving the river, lakes and open spaces for future generations. Our business community is vibrant and growing, providing places to shop, work or own a business. More than a shopping area, our Downtown includes places where people gather together. Quality public and private schools make St. Michael a desirable place to raise a family and provide opportunities for learning at all ages. The diversity in housing ensures affordable, quality living for everyone, including families, seniors and our grown children who are ready to return to the community. Neighborhoods are surrounded by parks and open spaces offering recreational opportunities and natural views. Trails and sidewalks provide safe connections within and between neighborhoods, schools, parks and shopping areas. Our convenient location makes it easy to access the employment, shopping, entertainment and recreational opportunities of the Twin Cities and St. Cloud Metropolitan Areas.



protecting and preserving  
the river, lakes and open spaces  
providing places  
to shop, work or own a business  
places where people gather together

offering recreational  
opportunities and natural views  
neighborhoods, schools,  
connections  
parks and shopping areas

# 1991 | pre sprawl



# 2003 | development explosion



# 2012 | current state







Monticello

Interstate 94

Albertville

Rogers

Pelican Lake

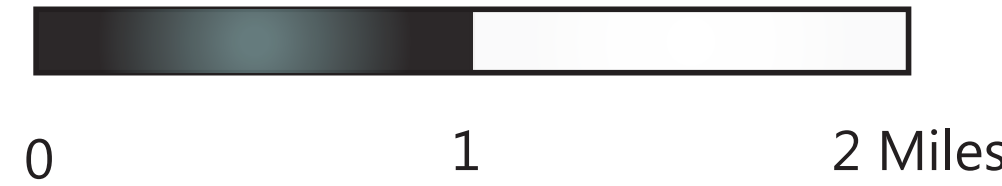
170 Acre Site

St Michael

Maple Grove

Crow River

- Water Basins
- Restoration Areas
- Lakes and Rivers
- Streams and Ditches
- Proposed Channel
- DNR Proposal



**biological**

elements

**physical**

elements

**cultural**

elements

**Ducks Unlimited**

DNR has identified Pelican Lake as the home to hundreds of bird species, making it extremely important to regulate the level and quality of the water.

**Native to live**

Native species emphasise the unique location of a city. Parks function as resilient 'lungs' of the city improving air quality.

**Biological Elements**

Relocating parking allows storm water to function as well as a field runoff to be cleaned in the same system.

**Ice Cream Social**

Create events all throughout the year throughout all demographics.

**Pave the Way**

Roadways will need to manage projected traffic volumes

**Marketing the Town**

Businesses in the area should thrive of the population of the town and the visiting members of local communities.

**Re-Routing Pelican**

Pelican Lake's level needs to be managed in order to protect precious local habitat.

**Amphitheater**

Outdoor amphitheaters are perfect ways to get large groups of people together regularly. Outdoor concerts help bring in large volumes of visitors as well.

**Let your rural roar**

Connection versus interdependence within a system of other cities.

**Reveal History**

History of a city gives it authenticity. It reflects local culture, local knowledge, and reinforces a sense of place and local identity.

**Who Are You**

Everyone in the city is included, has rights, and is entitled to a better life. Elderly, disabled, and poor are seen as potentially valuable social capital.

**Home is Where You Hang Your Heritage**

Parks and other forms of natural heritage are important for culture as it creates a memory, and sets up a sense of place.

# constraints

- No form of public transit system.
- Chosen lack of government funding.
- Overall feeling of population constraints.
- Housing market stopped growth since 2008.

# opportunities

- Diversity in age groups.
- Pride in being a self sustaining city.
- Outdated & obsolete city master plan.
- DNR's ongoing interest in Pelican Lake.
- Community feels like a family 'protective'.



# bio ditch

Drainage ditches are a large part of agriculture. This system maintains both peak ditch drainage capacity, and minimum net pollution and nutrient transportation.



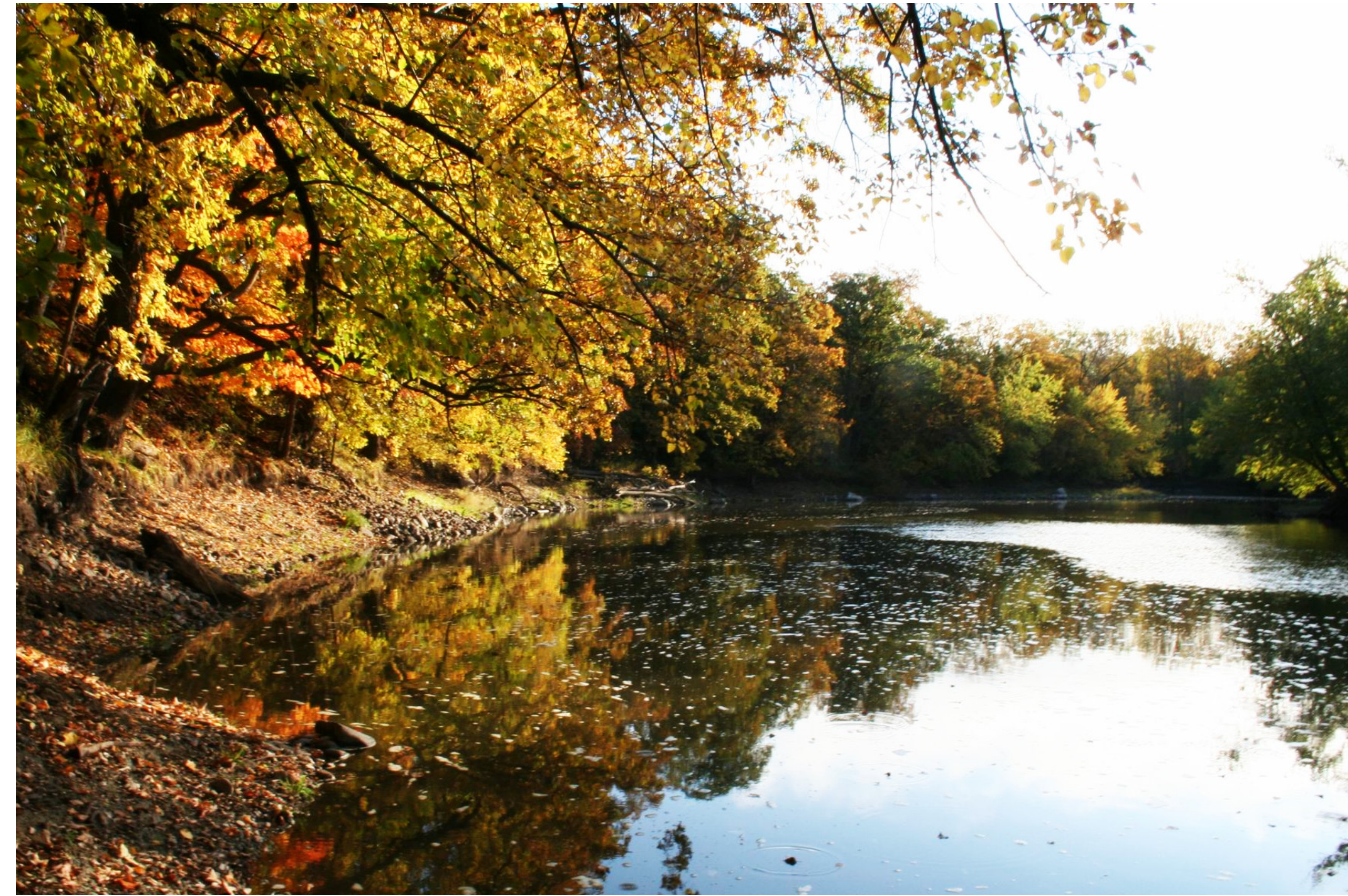
# retention tension

Retention basin responsible for runoff of the entire Town Center area. It is also home to wildlife including Canada Geese. The basin is constantly relieving erosion and flooding in the Crow River and helps to improve water quality. It is also an aesthetic amenity providing an opportunity for a fountain.



# crow river

Crow River was once lined with “big woods,” a thick forest of maple, basswood, elm and other hardwoods. Today the river is now bordered by agriculture, prairie and hardwood vegetation. The he river is generally smooth flowing with a minimal rapids, classifying it as a wild and scenic river.



# farmland

St Michael's rich physical quality is displayed through agricultural land. These lands promote sustainability by maintaining productive soil quality and decreasing loss of prime agricultural land.



# open for *spaces*

The preservation of open spaces throughout the community will be a key to preserving the rural character so highly prized in the community.





# firm foundation

An important characteristic of St Michael is the religion which it was founded on. The town prides itself on the architectural detail of the church as well as what it stands for.



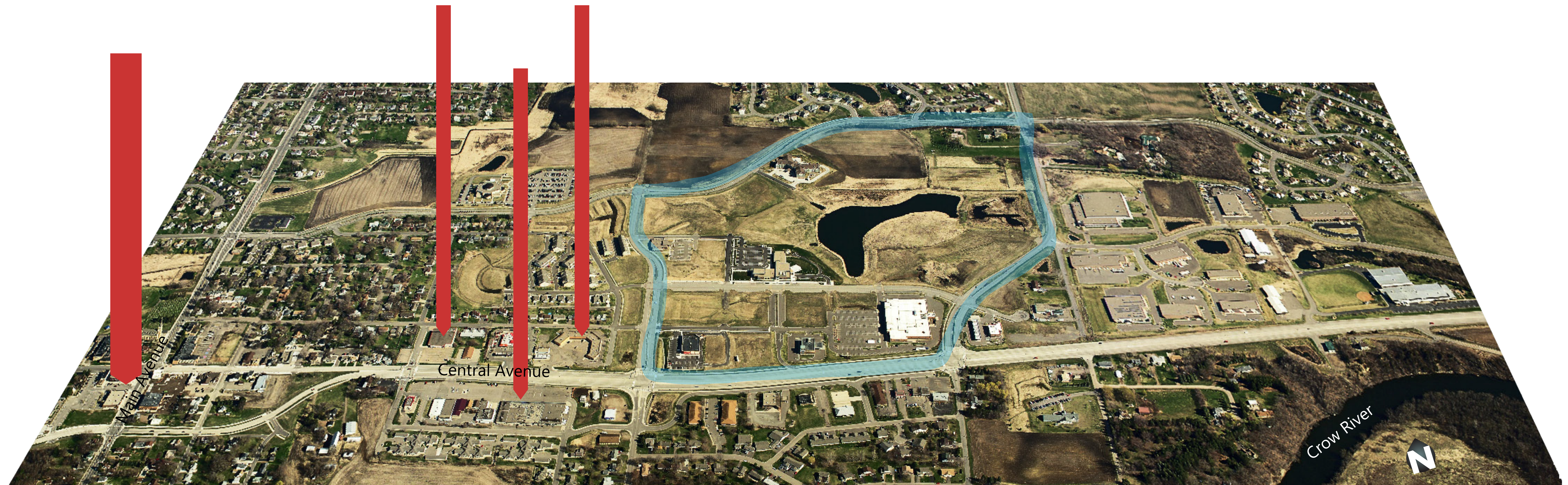
# school in session

The new population growth is largely due to the increasing interest in St. Michaels public and private schools.



# shopping

St Michael promotes the retention and expansion of existing businesses while attracting new businesses to the community in order to promote a diversified tax base, job opportunities, and convenient shopping for residents. The city plans with the business community in mind making it an attractive environment for new and existing businesses.



# hot spots

The new Great River Regional was a part of a multi-use civic structure constructed in 2010. The building is an example of the architectural vision the city shares for the future of Town Center. Another hot spot in the area is the local Marketplace grocery store. Both buildings have been heavily utilized making the area a busy energetic hub.



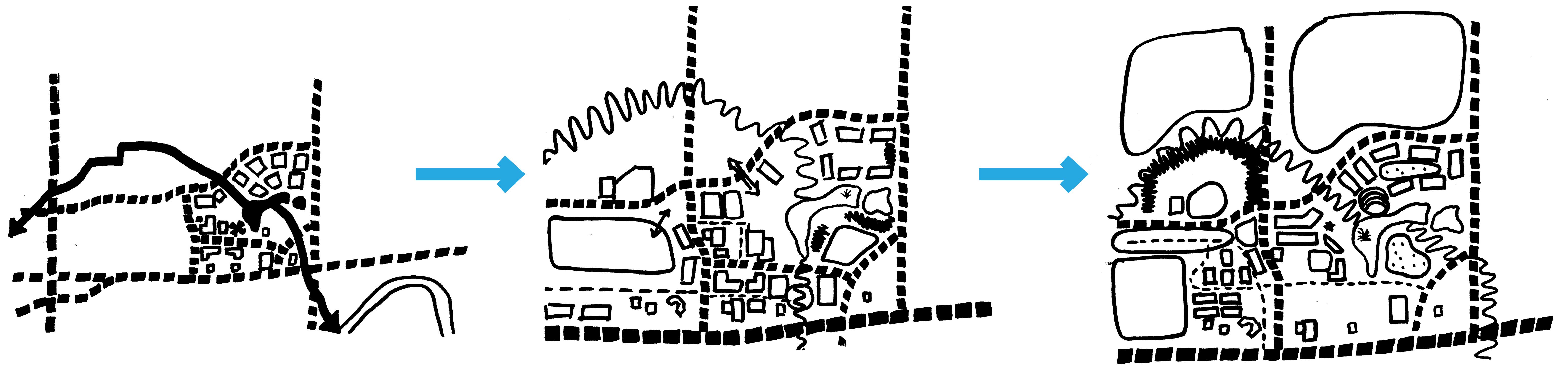
# inspiration

Historical footprints of the site reveal a network of various roads and paths utilized on the site. The footprints also uncover a prominent drainage ditch, that once transported water for agriculture and for stormwater purposes. Breathing life into these existing bones restores the history and sustainability the city once possessed.



# design is a process

Through collaboration with members of the community, city planners, and engineers, a series of Town Center alternatives was developed. Revisions were made based on impacts on pedestrian and vehicular movement, land use, business development and the physical character of Downtown.



# master plan

Town Center is a 170 acre site located just East of the downtown corridor. It blends green space networks with the surrounding city and holds commercial, residential, park and civic buildings.

Co Hwy 19

Main Avenue

Central Avenue

Edgewood Drive

Town Center Dr

Frankfort Pkwy NE

Maciver Ave NE

Highway 241

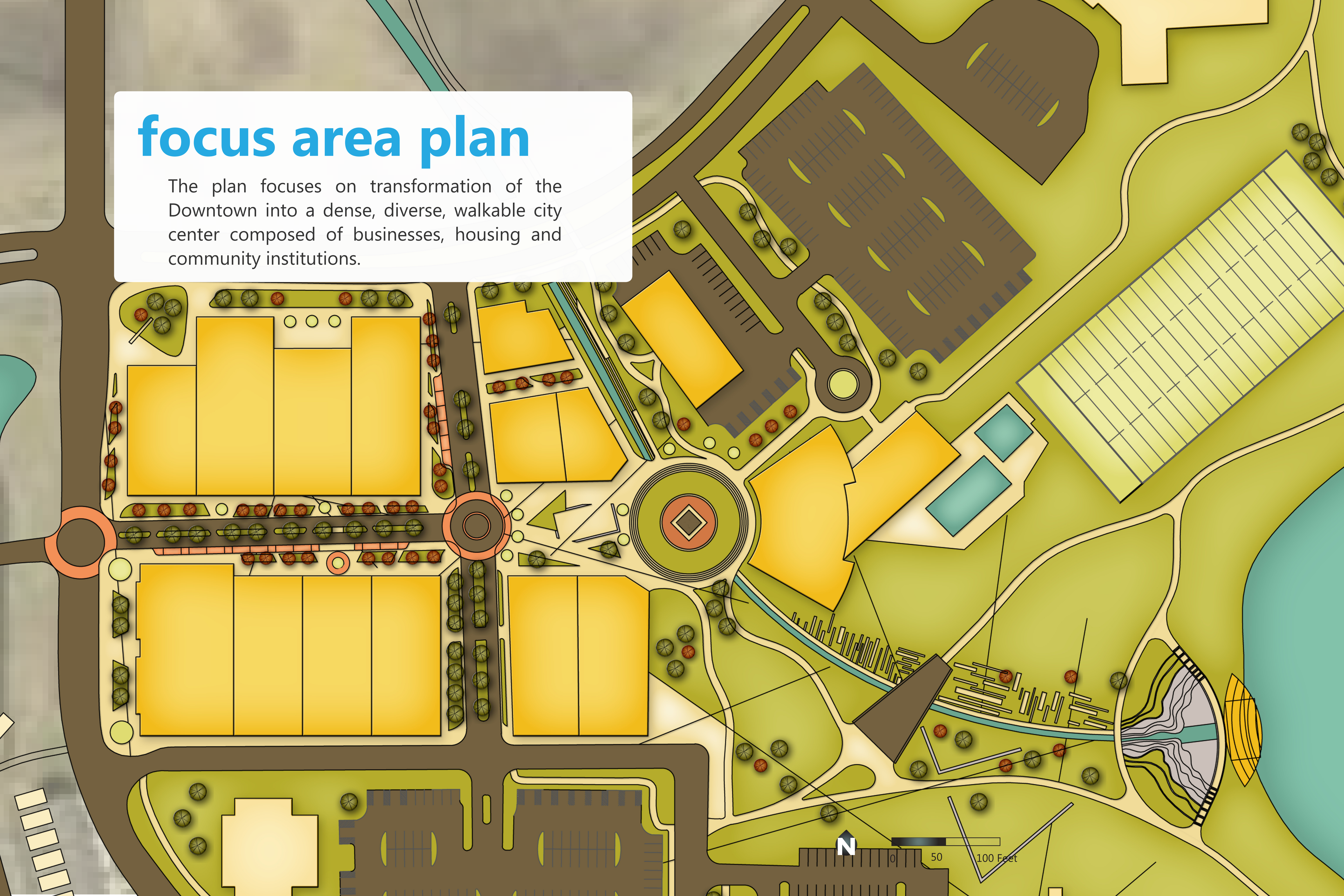
Crow River



0 500 1000 Feet

# focus area plan

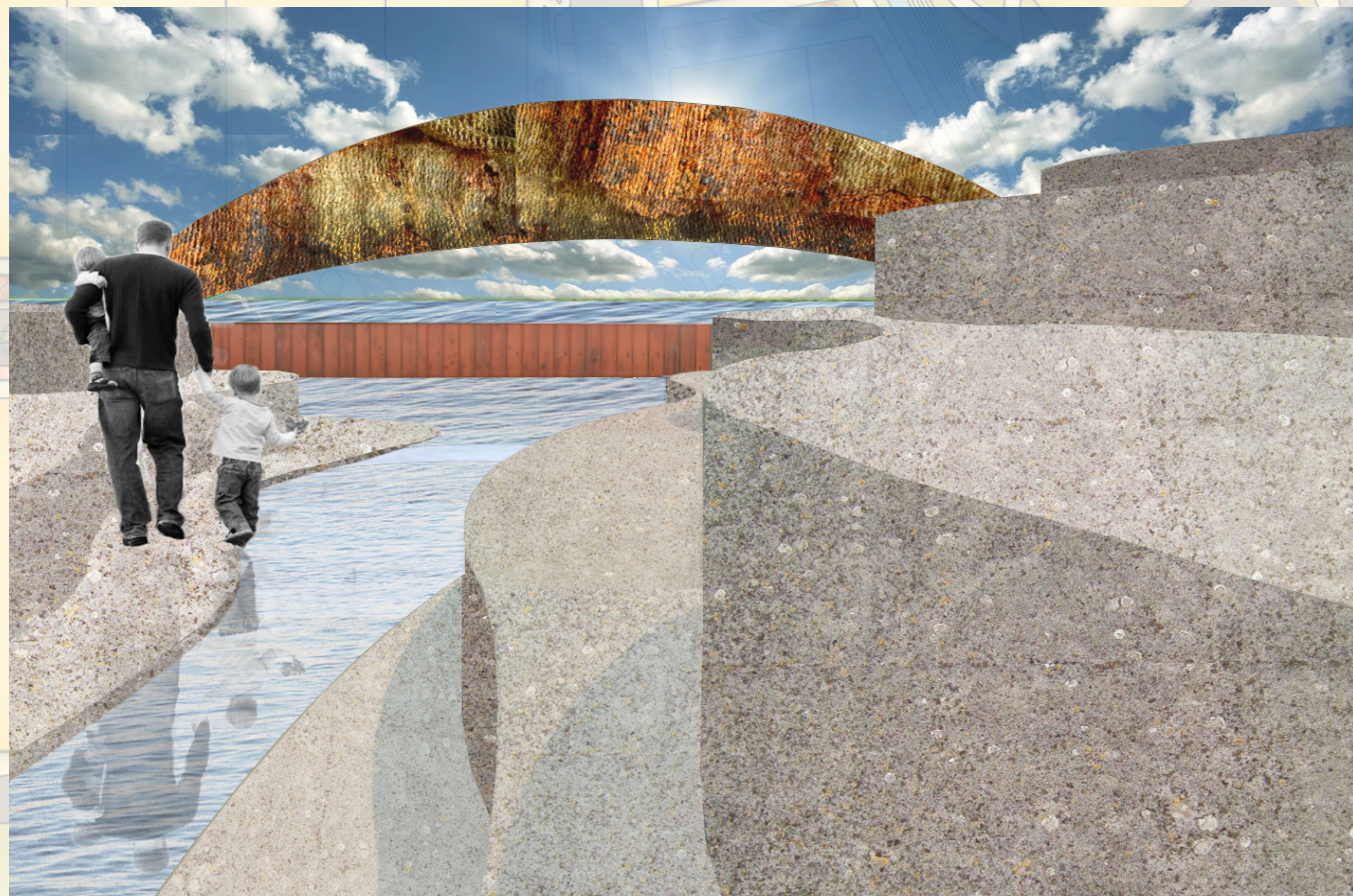
The plan focuses on transformation of the Downtown into a dense, diverse, walkable city center composed of businesses, housing and community institutions.





# amphitheater

This open-air venue would attract visitors to the Downtown area. The theater would bring life and energy, and stimulate economic growth for new and existing businesses.



Creates a connection to assisted living and single family residential

Water retention is vital to maintaining Pelican Lake's level as well as restoring clean water to Crow River.

Everyone is invited to join the weekly festivities along the waterfront amphitheater

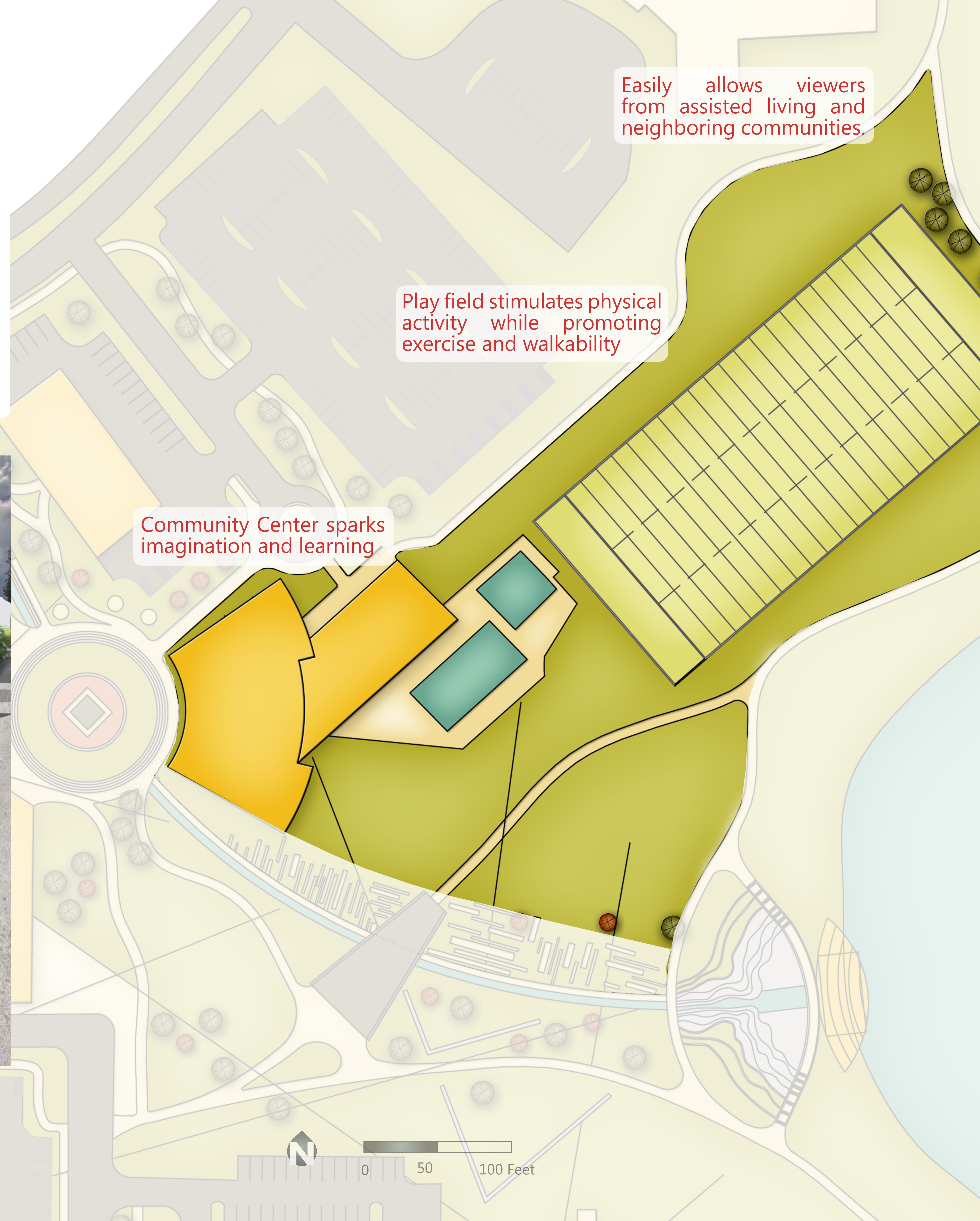
A unique amphitheater creates a focal point of the entire area not just the city



0 50 100 Feet

# overall wellness

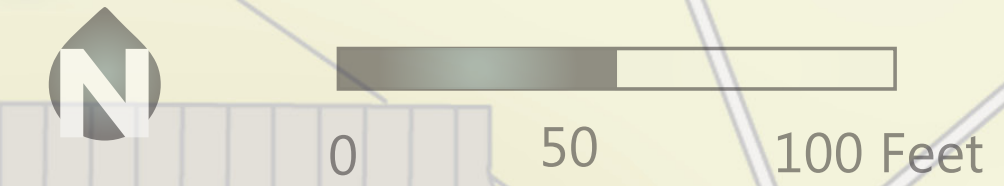
Placing the Community Center in the center of the plan allowed for it to become the nucleus and source for all the energy taking place in Town Center. Open space promotes activity and physical wellness.



Easily allows viewers from assisted living and neighboring communities.

Play field stimulates physical activity while promoting exercise and walkability

Community Center sparks imagination and learning



1

# down the drain

History reveals that there once was a drainage ditch similar to this one in this exact location over thirty years ago. Celebrating that history creates ornamental form designed functionality.

Native species emphasise the unique location of a city. Parks function as resilient 'lungs' of the city improving air quality.

The history of the city reflects local culture, local knowledge, and reinforces a sense of place and local identity.

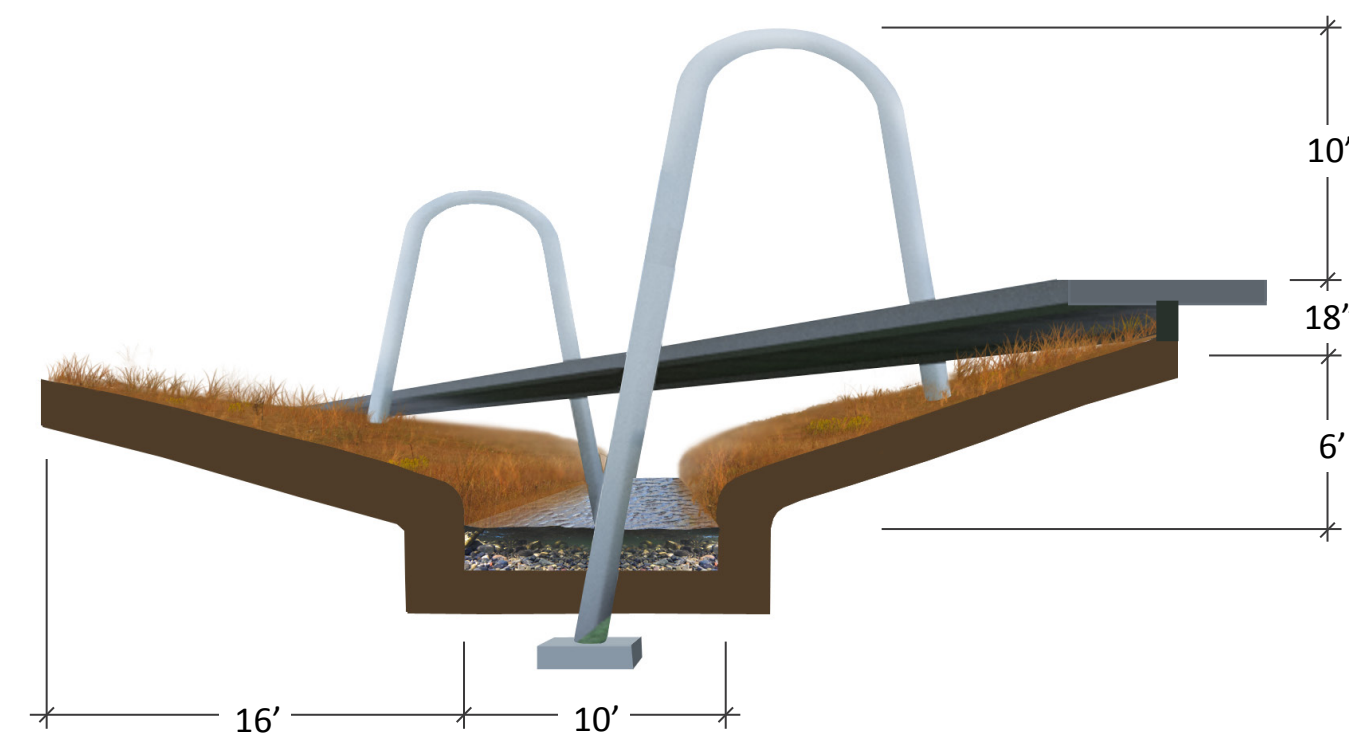
Parks and other forms of natural heritage are important for culture as it creates a memory, and sets up a sense of place.

Being the home to hundreds of bird species, making it extremely important to regulate the level and quality of the water.

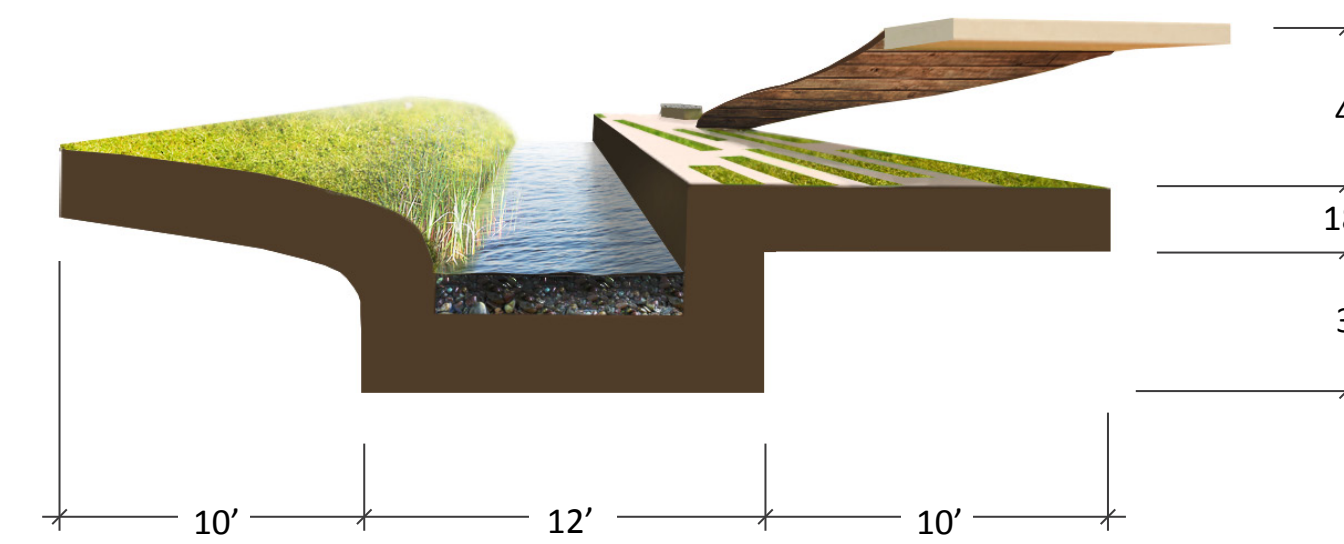


0 50 100 Feet

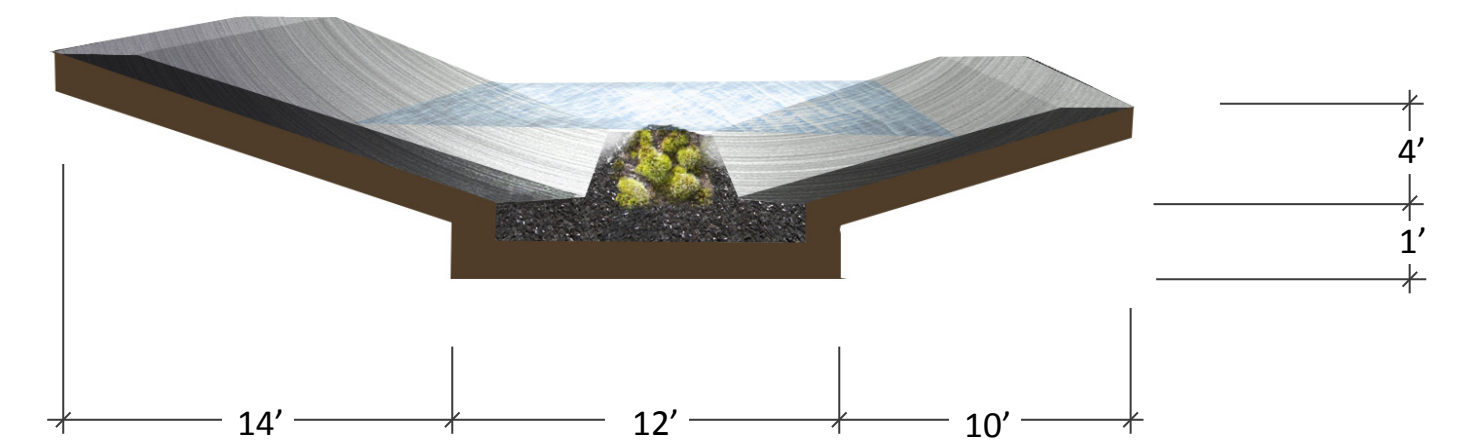
# rural road



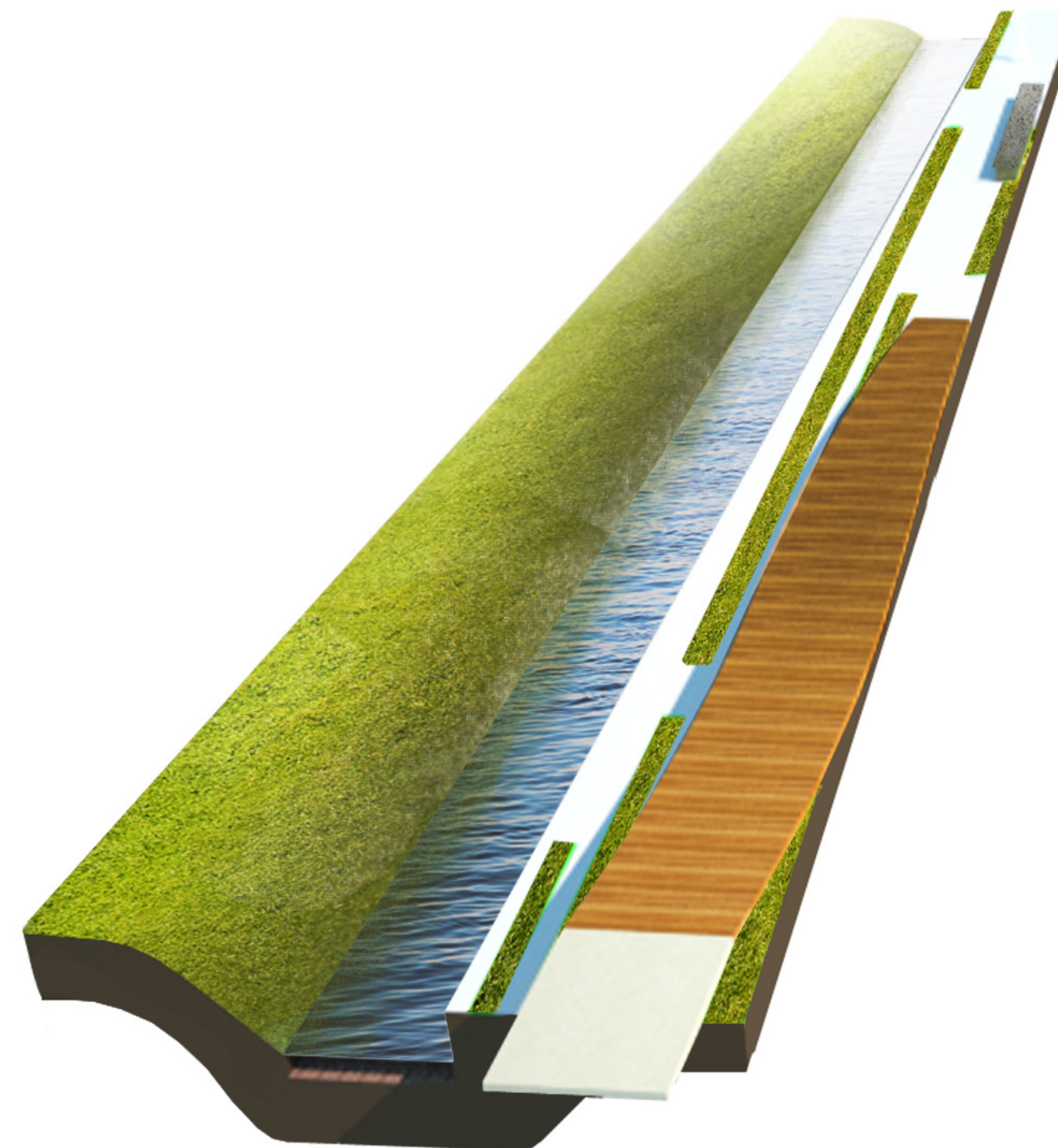
# subURBAN



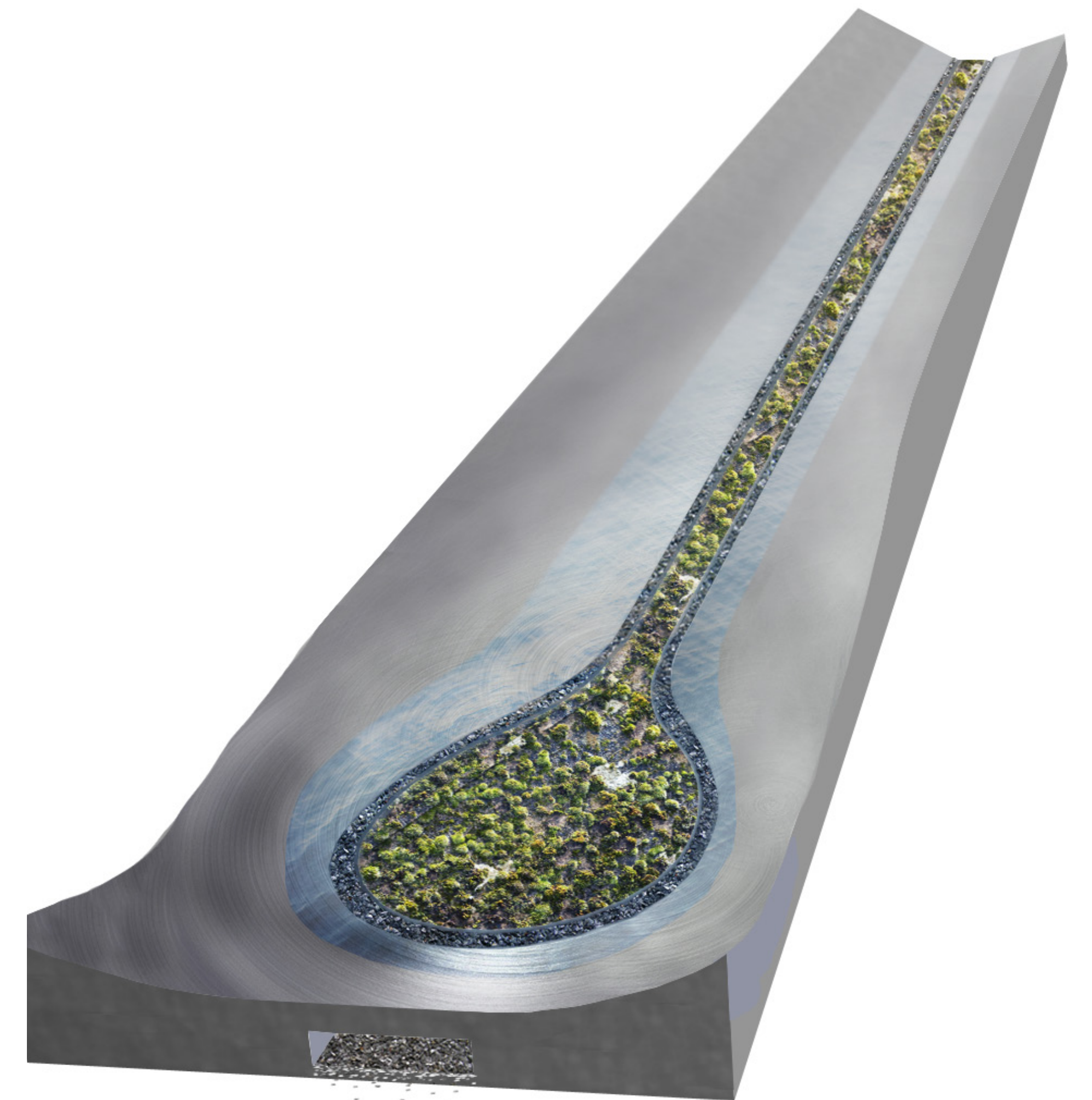
# grey to green



①



②



③

# town center plaza

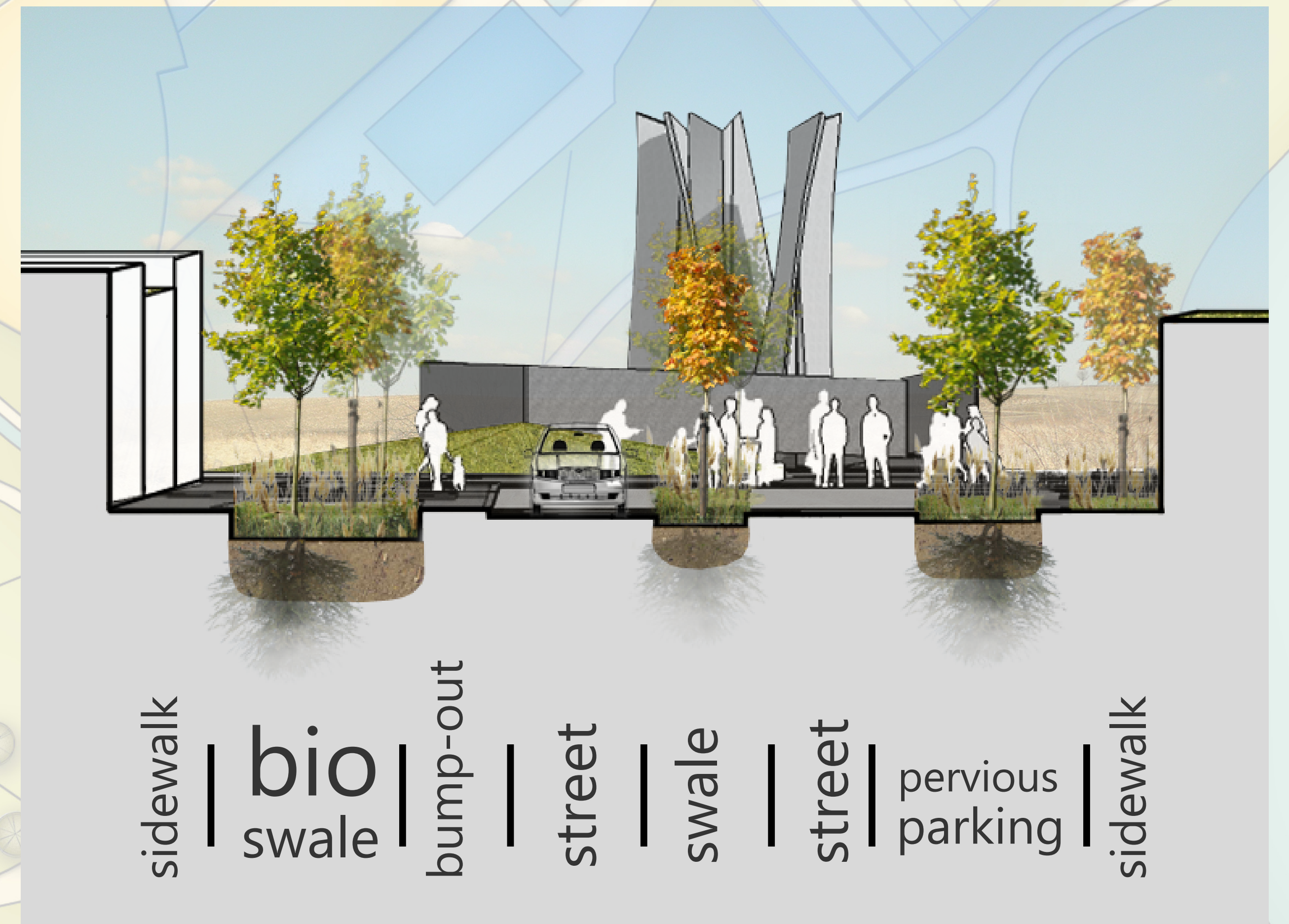
Mixtures of rain gardens and swales surround the impervious surfaces. This system eliminates the need for transporting polluted stormwater..



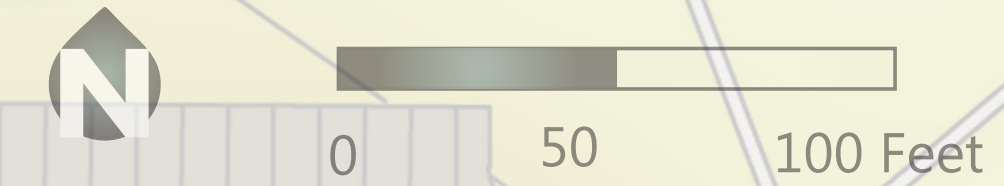
Create events for all demographics throughout the year.

Businesses in the area should thrive of the population of the town and the visiting members of local communities.

Relocating parking allows storm water to function as well as a field runoff to be cleaned in the same system.

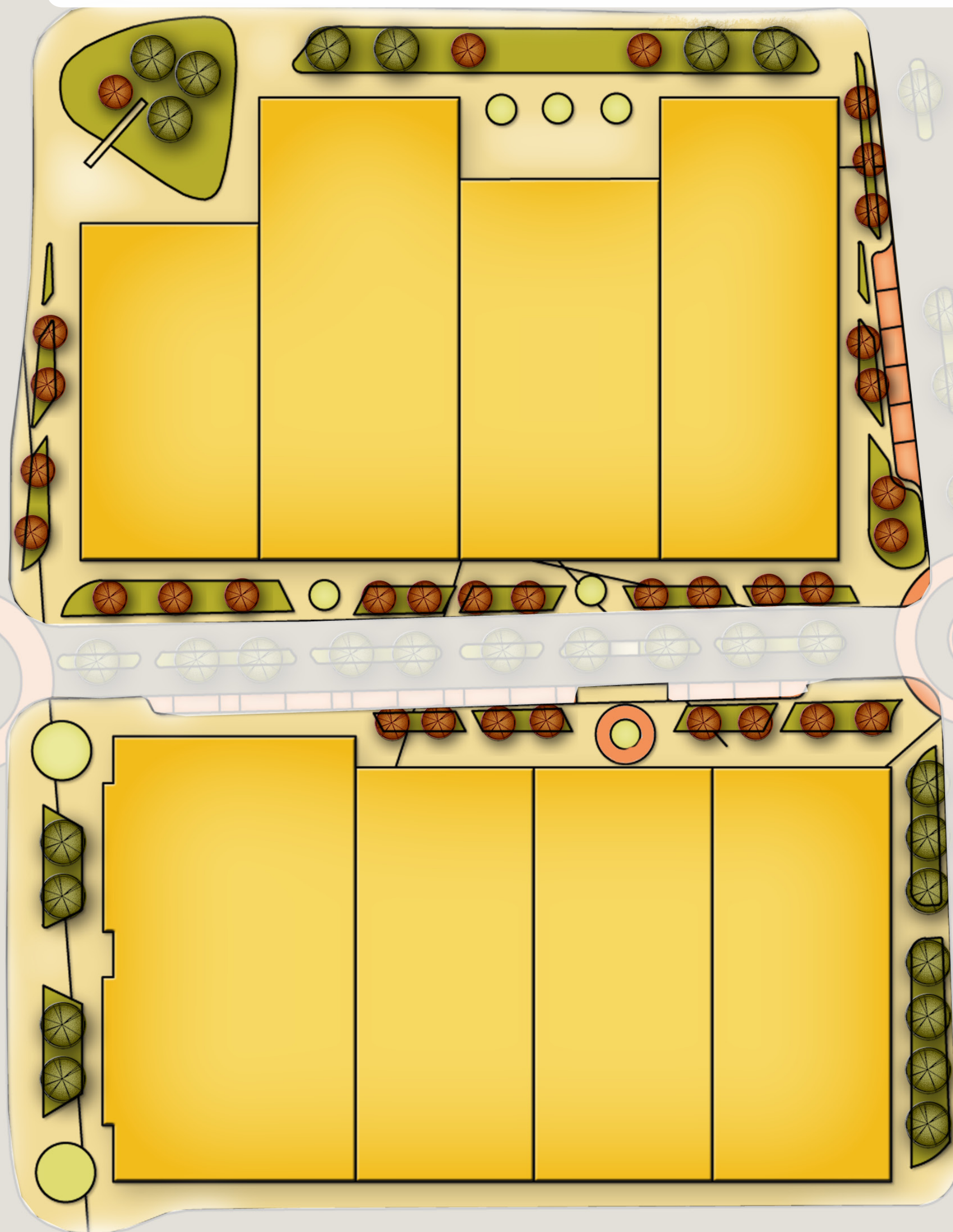


sidewalk | bio swale | bump-out | street | swale | street | pervious parking | sidewalk



# shoppes of STM

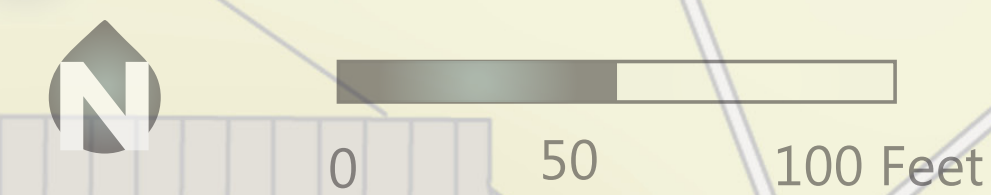
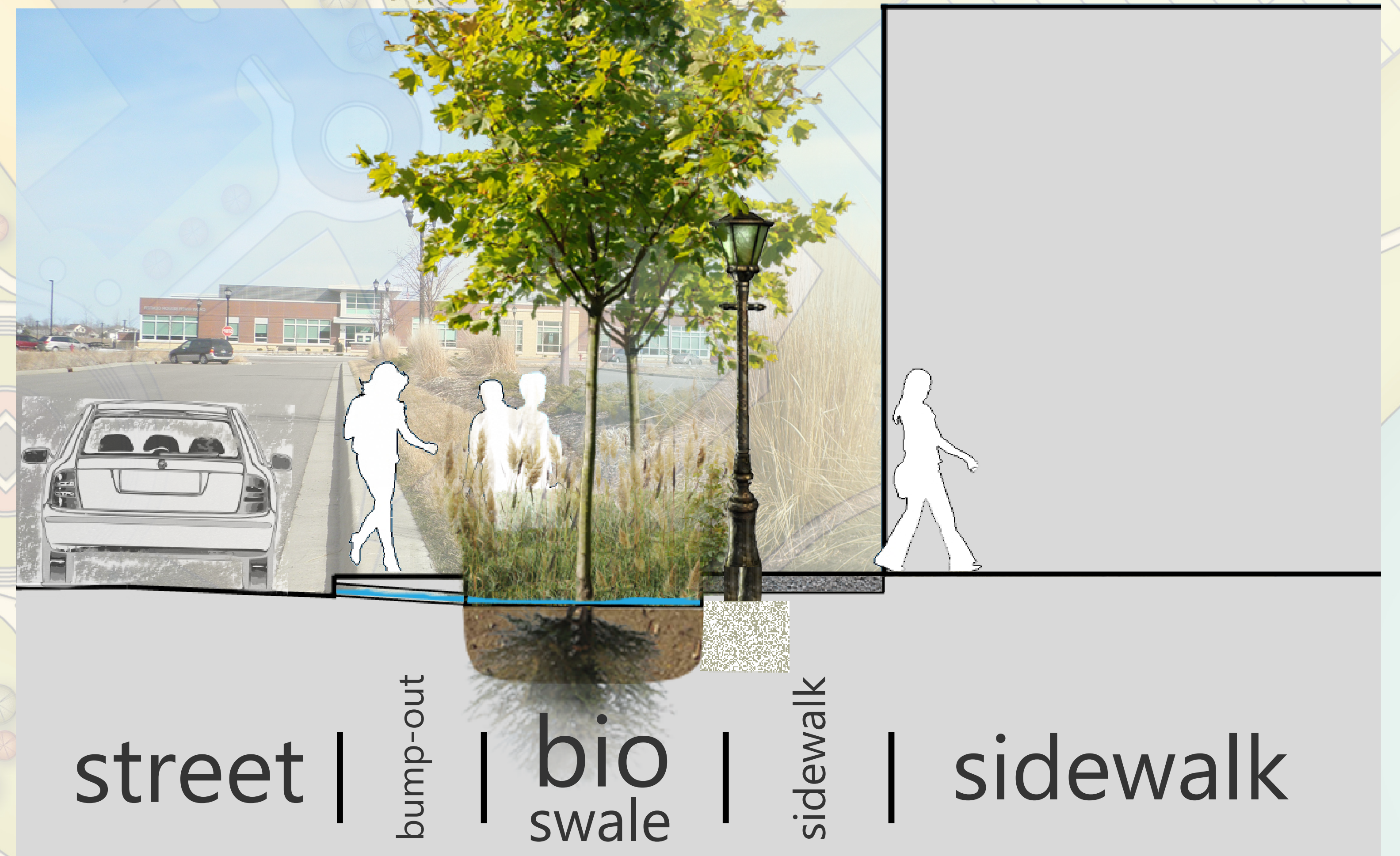
The Town Center corridor minimizes surface runoff while achieving calmer traffic flows. The softscape creates downtown ecologies that serve as hubs in the overall system.

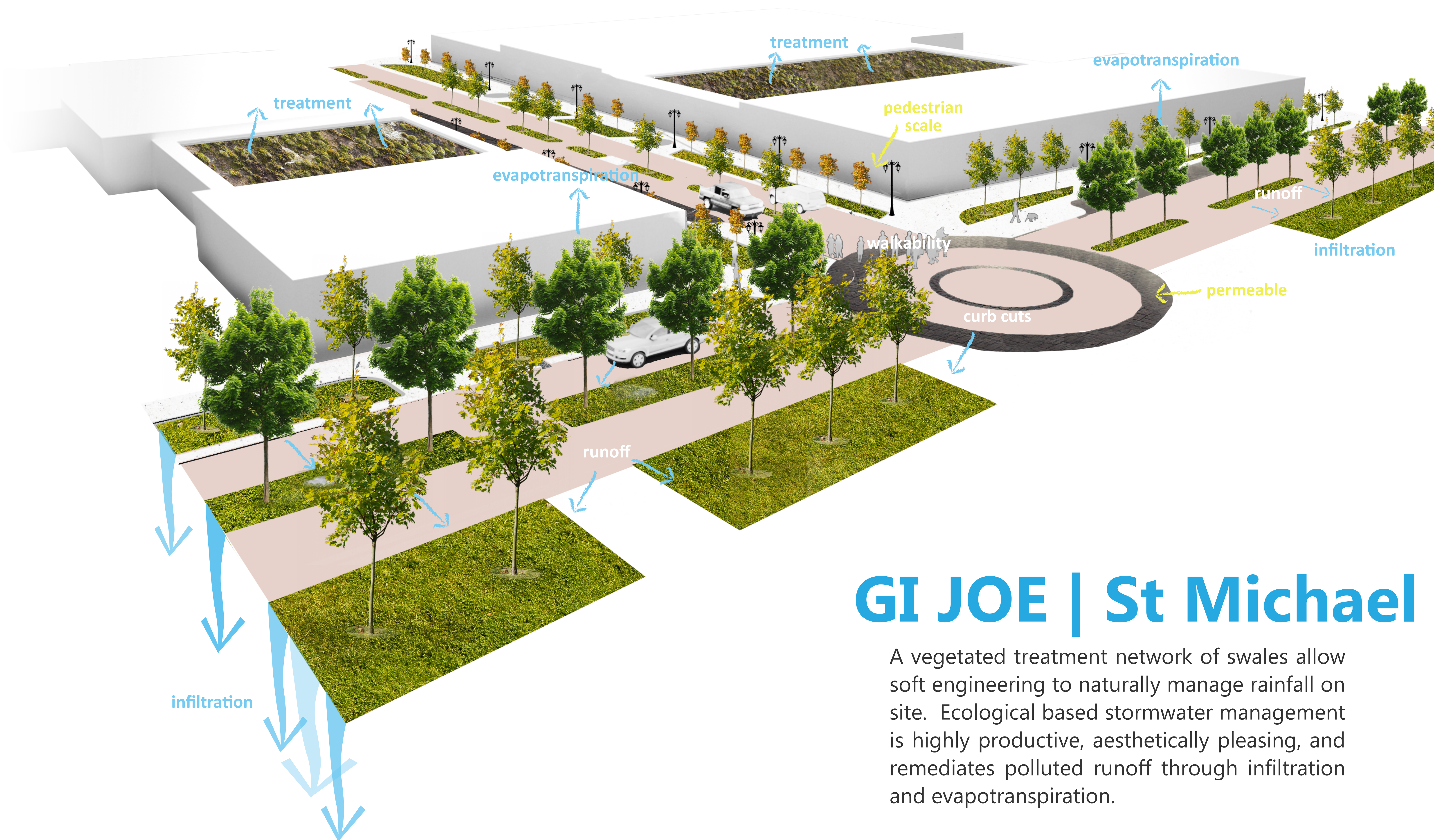


Connection versus interdependence within a system of other cities.

Roadways will need to manage projected traffic volumes

Native species emphasise the unique location of a city. Parks function as resilient 'lungs' of the city improving air quality.





## GI JOE | St Michael

A vegetated treatment network of swales allow soft engineering to naturally manage rainfall on site. Ecological based stormwater management is highly productive, aesthetically pleasing, and remediates polluted runoff through infiltration and evapotranspiration.

# biological

## elements

# physical

## elements

# cultural

## elements

### Ducks Unlimited

DNR has identified Pelican Lake as the home to hundreds of bird species, making it extremely important to regulate the level and quality of the water.

### Native to live

Native species emphasise the unique location of a city. Parks function as resilient 'lungs' of the city improving air quality.

### Biological Elements

Relocating parking allows storm water to function as well as a field runoff to be cleaned in the same system.

### Ice Cream Social

Create events all throughout the year throughout all demographics.

### Pave the Way

Roadways will need to manage projected traffic volumes

### Marketing the Town

Businesses in the area should thrive of the population of the town and the visiting members of local communities.

### Re-Routing Pelican

Pelican Lake's level needs to be managed in order to protect precious local habitat.

### Amphitheater

Outdoor amphitheatres are perfect ways to get large groups of people together regularly. Outdoor concerts help bring in large volumes of visitors as well.

### Let your rural roar

Connection versus interdependence within a system of other cities.

### Reveal History

History of a city gives it authenticity. It reflects local culture, local knowledge, and reinforces a sense of place and local identity.

### Who Are You

Everyone in the city is included, has rights, and is entitled to a better life. Elderly, disabled, and poor are seen as potentially valuable social capital.

### Home is Where You Hang Your Heritage

Parks and other forms of natural heritage are important for culture as it creates a memory, and sets up a sense of place.