

# SUSTAINABILITY 101

## WHAT DOES IT ALL MEAN?



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# Who are We?



# Overview

- **What does “sustainability” mean?**
- **Sustainable planning and zoning practices**
- **Green Infrastructure**



# Sustainability

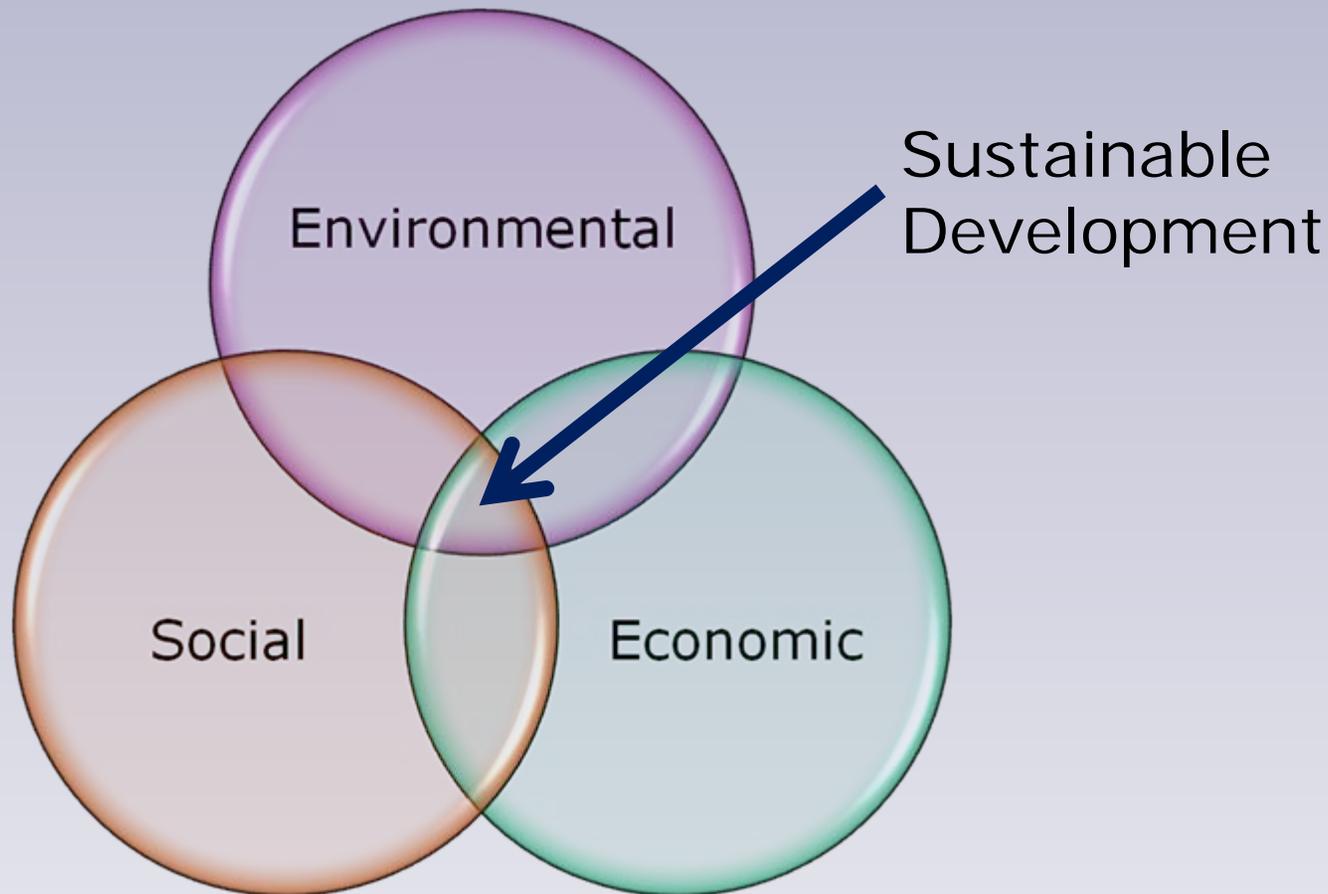
# Sustainability in General

- In 1987, the UN World Commission on Environment and Development Report, *Our Common Future*, was the first international effort to introduce sustainability.

Sustainability is the concept that the **needs of the future must not be sacrificed to the demands of the present.**

# Sustainability in General

- Focuses on three main elements



# Why are we not sustainable?

- Over consumption
- Population growth
- Dependence on non-renewable resources
- Pollution
- Environmentally and socially destructive development patterns
- Resource distribution inequities
- Limited public participation

# How can we be more sustainable?

- Compact development
- Mixed Uses
- Infill development
- Pedestrian/bicycle friendly
- Transit/multi-modal
- Home based occupations
- Local food production
- Affordable housing
- Avoid the “devil’s density”



# Name that Policy...

## Sustainability

- Mixed use
- Compact development
- Infill development
- Pedestrian/bike friendly
- Multi-modal transportation

## Smart Growth

- Mixed use
- Compact building design
- Range of housing
- Walkable neighborhoods
- Multi-modal transportation

# Sustainable Planning and Zoning

## ...in Ohio

**GreenCityBlueLake**

Sustainability in Northeast Ohio

**GCBL blogs**

**Europe finds industrial re-use drives tourism**  
 Alan Lefkowitz | Sep 17 2009 - 7:08am | 0 comments

What are the lessons for Cleveland from Germany's conversion of Rust Belt industrial heritage into clever new uses? Germany maintained the fun-to-visit missions from the European Cultural Capital—and formed public-private partnerships over 20 years. Global Science Director of Mannesmann Röhre, a lead agency for the international design competition and redevelopment of massive sites like the coal plant into an arts and office complex at Zollverein, said at a German Cleveland Fund conference in Cleveland this week:

of the size of these big (industrial) sites," he advised. "Think of single sites."

**Upcoming events**

September 2009						
Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

**Featured: Transportation**

**What's hot**

Popular Comments Tags

**Today's:**

0 links with this label in 0 months?

**Toledo-Lucas County SUSTAINABILITY Commission**

Green Home | The Commission | Green Calendar | Mapping and Tours | Resident FAQ | Local Green Links | About

**Sustainable Energy**

Green

Recycling

Organic

Transportation

Water Quality

Biodiversity

Visitor locations

Click to list

Welcome to the Toledo-Lucas County Sustainability Commission website! We hope this site serves as your nexus for all things sustainable within Lucas County. Wondering where wind turbines or rain gardens are located? Click on "Mapping and Tours" above and find out. How about tips for living a green lifestyle? Browse the sidebar or click on "40 ways to go green."

**Commission News Posted 09 September 2009**

The Treasurer for the State of Ohio announced a new program today that aims to make energy efficient upgrades more affordable for Ohio homeowners. For more information regarding this program, jump over to the announcement on the Treasurer's webpage [here](#).

**Commission News Posted 06 August 2009**

Our **Summer Edition** of Living Green, Saving Green has gone live. Check out the article published in The Blade today [here](#).

**Commission News Posted 28 July 2009**

The **rain barrel and composter sale** sponsored by American Rivers, the City of Toledo, and the Toledo-Lucas County Rain Garden Initiative is going on right now! If you can't place your order in the next few days, there will be an additional 100 rain barrels and 35 composters delivered to the **Frogtown Fair** on August 8th (9am - 3pm). Get there early to grab yours! Click [here](#) for more information.

**News Archive ->>>**

**Questions? GREEN LINE 419-79-GREEN**

**40 WAYS to go GREEN**

**Living GREEN**

**Saving GREEN**

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 40 Ways Green Calendar This Site Contact Us

# Sustainable Regulations

## ▣ **Environmental**

- ▣ Climate Change and Air Quality
- ▣ Water Quality and Conservation
- ▣ Alternative Energy Production and Energy Conservation
- ▣ Mobility/Connectivity/Transit
- ▣ Recycling and Waste Reduction

## ▣ **Social**

- ▣ Attainable and Diverse Housing
- ▣ Community Health and Safety
- ▣ Food Production and Nutrition
- ▣ Open Space, Parks, and Recreation

## ▣ **Economics**

- ▣ Economy

# Sustainable Regulations

- Having more sustainable regulations occurs in three different ways:
  - *Removing barriers*
  - *Providing incentives*
  - *Mandates*

# Environmental

- **The Issue:** Climate Change/Air Quality
- **The Problems:** Greenhouse gases and pollution
- **The Solutions:**
  - ▣ More compact development, allowing higher densities
  - ▣ More emphasis on alternative modes of travel...bikes, pedestrian, mass transit
  - ▣ Encouraging home occupations and live/work opportunities

# Definitions

## “Complete Streets”

- Streets that are open and safe to everyone...multiple modes of transport



# Definitions

## Live/Work Unit

- A business and dwelling unit in the same structure...larger scale home occupation



# Environmental

- **The Issue:** Alternative Energy
- **The Problems:** Depleted energy resources, pollution
- **The Solutions:**
  - ▣ Solar panels – accessory and principal
  - ▣ Wind turbines – attached to a structure or stand-alone
  - ▣ Geo-exchange systems – Using the earth for heating and cooling

# Definitions

## Wind Turbines

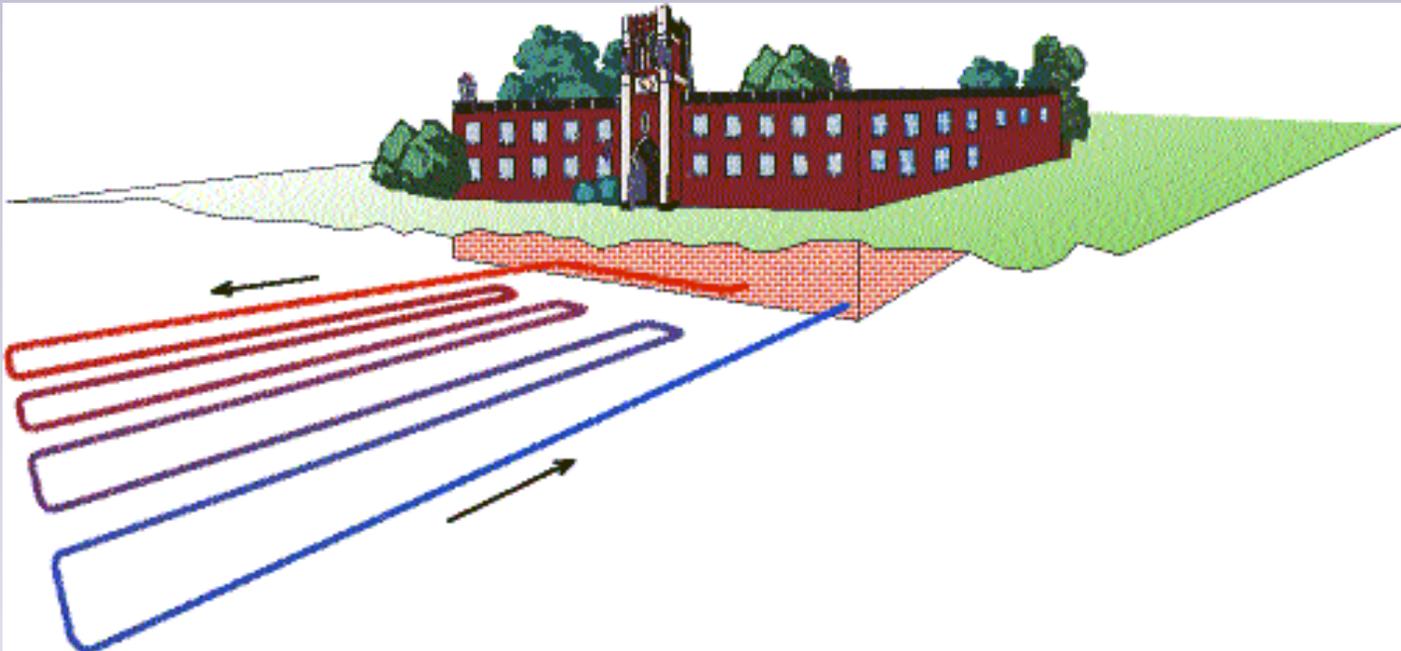
- A turbine that turns wind into electrical energy



# Definitions

## Geo-Exchange

- Using the ground to heat and cool a building.



# Social

- **The Issue:** Attainable and Diverse Housing
- **The Problems:** Lack of affordable, workforce housing in the community
- **The Solutions:**
  - ▣ Allowing accessory dwelling units
  - ▣ Incentives for a mixture of housing types and/or values within a development

# Social

- **The Issue:** Food Production and Safety
- **The Problems:** Growing food safety problems, “importing” of foods
- **The Solutions:**
  - ▣ Community gardens
  - ▣ Farmers markets
  - ▣ CSAs – Community Support Agriculture
  - ▣ Natural landscaping rather than maintaining pristine lawns
  - ▣ Raising of chickens in residential areas

# Economics

- **The Issue:** Sustainable Economy
- **The Problems:** Vacant, underutilized properties
- **The Solutions:**
  - ▣ Cutting back on the amount of retail zoning
  - ▣ Mixed-use, higher densities near commercial areas – More rooftops
  - ▣ Encouraging entrepreneurs – home occupations as an incubator for new community businesses

# Green Infrastructure

Ecological processes, both natural and engineered, that act as the natural infrastructure. It includes streams, wetlands, woodlands, meadows, parks, open space, green roofs, gardens, and working lands that enhance overall environmental quality and provide utility services back to the community.

# Green vs. Gray



## Gray Infrastructure:

- ❑ Transportation Networks
- ❑ Roads, drives, & walks
- ❑ Storm sewers
- ❑ Sanitary & Water Treatment Facilities
- ❑ Bridges & Culverts
- ❑ Buildings & Structures
- ❑ Other utilities

# Green vs. Gray

## Green Infrastructure:

- ❑ Trees & Woodlands
- ❑ Streams & Lakes
- ❑ Wetlands
- ❑ Meadows
- ❑ Inorganic Habitat
- ❑ Living Organisms
- ❑ Soil
- ❑ Water
- ❑ Air



# Green Infrastructure

## **Economic:**

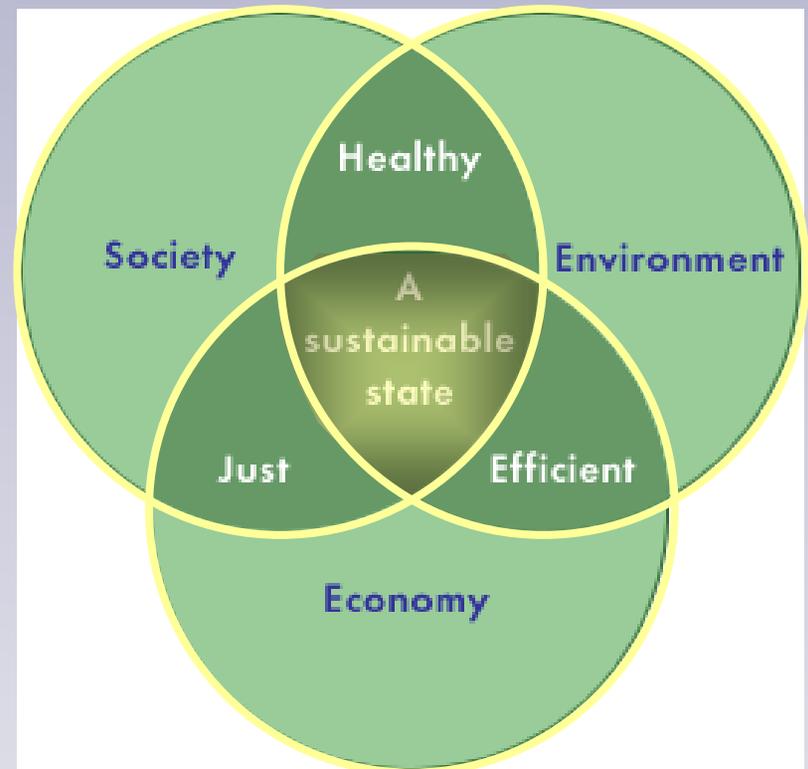
Reduces other infrastructure costs, , reduces health care costs, keeps taxes lower, and provides high land values.

## **Social:**

Provides places for recreation, enjoyment of nature, improves health, and creates a better sense of place (return on perception)

## **Environmental:**

Protects clean air and water, mitigates storms runoff and flooding, prevents erosion, protects wildlife habitats, and keeps a balanced ecosystem.



# Green Infrastructure



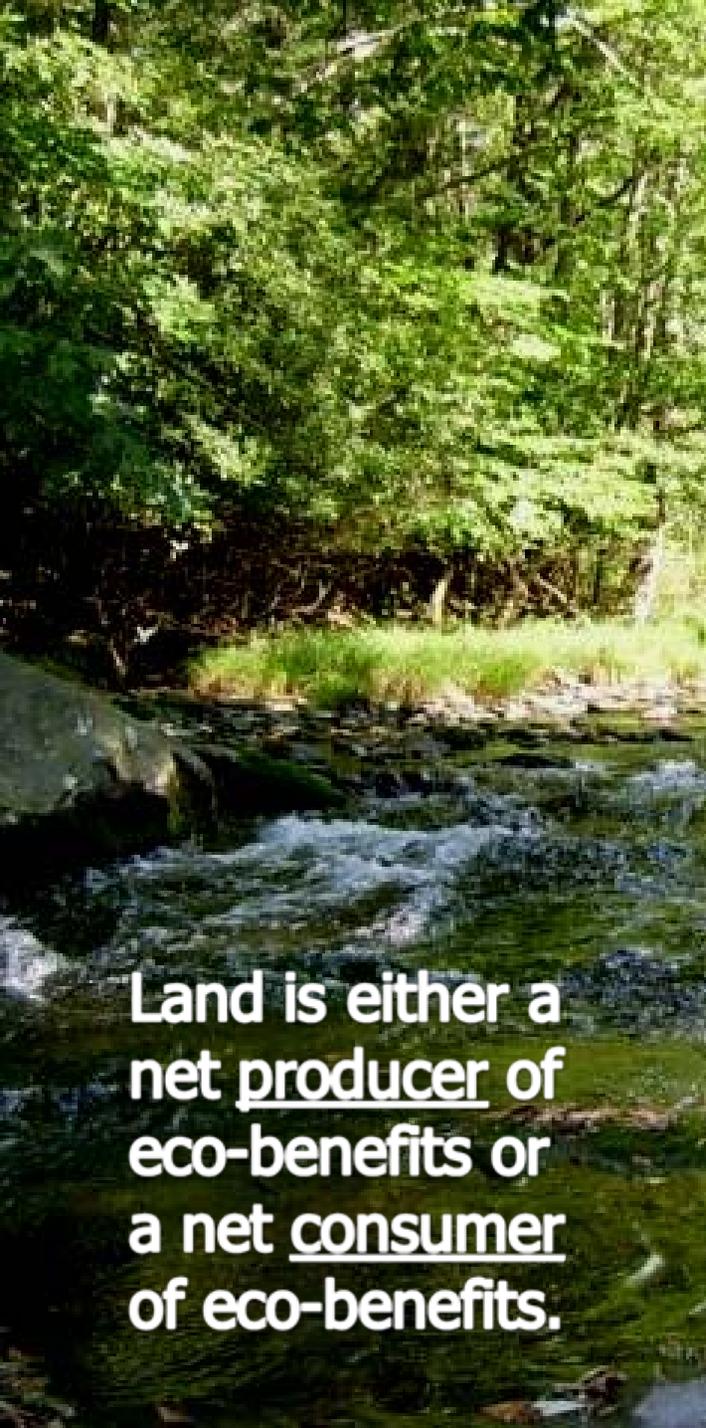
**Regional Scale:** Conservation Planning at the Regional Watershed Scale

**Community Level:** Natural System Protection at the Community Level

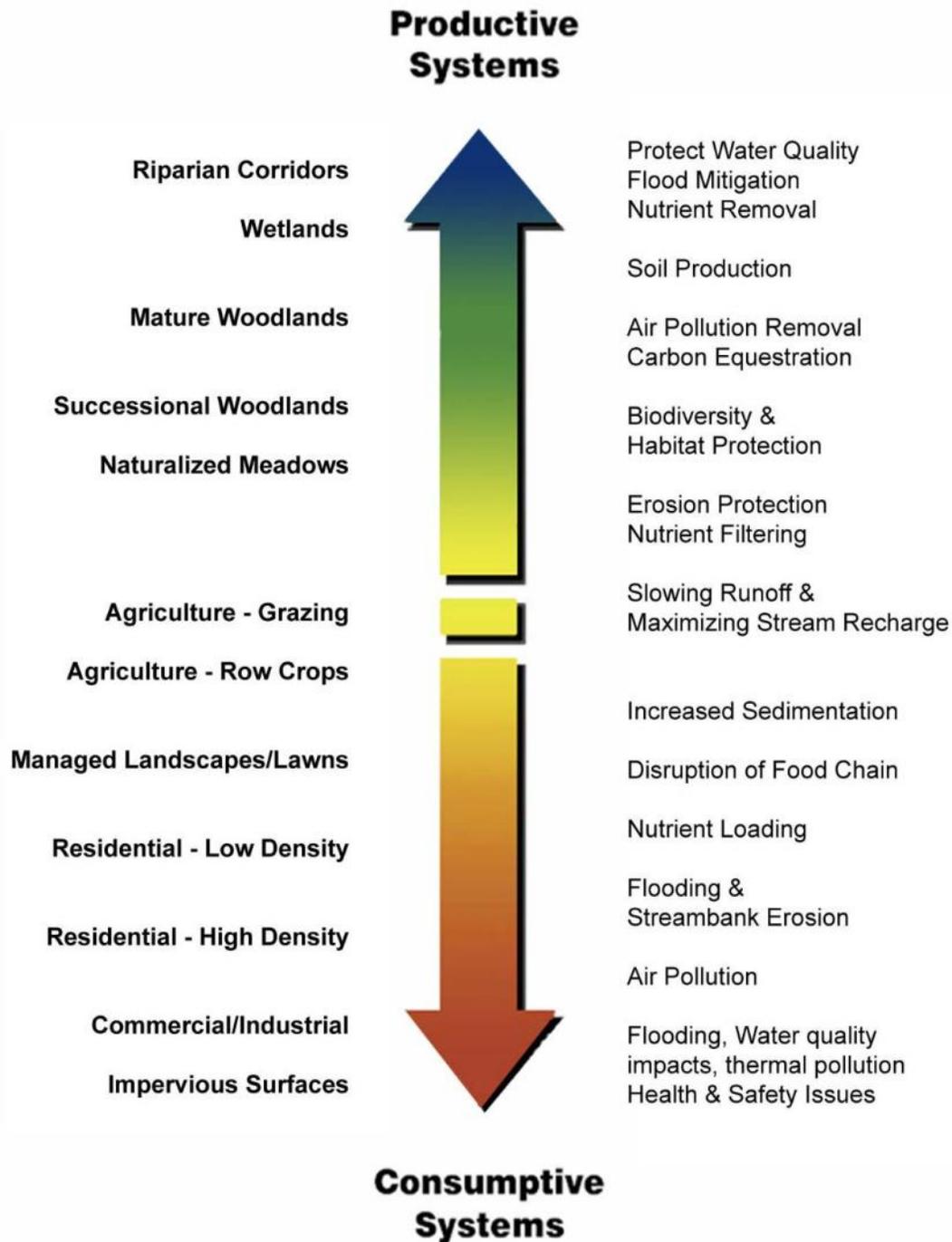
**Site Specific:** Restoring Natural Function on Site through Bioengineering

# Regional Scale

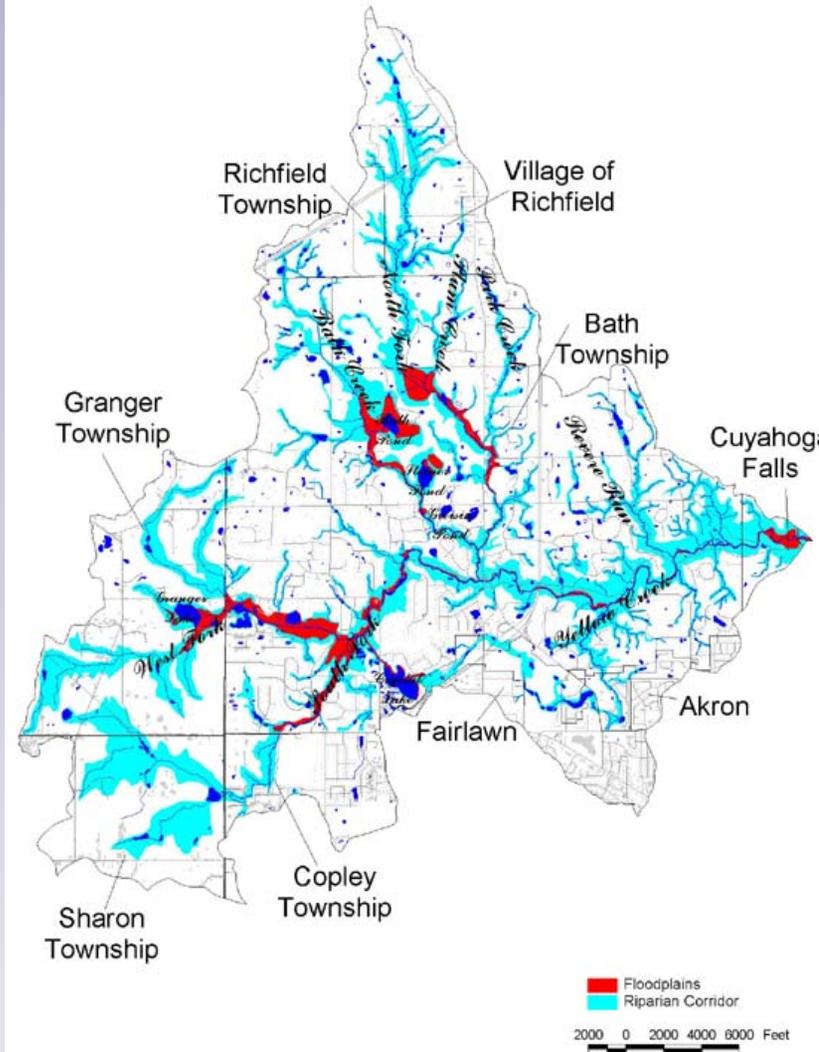
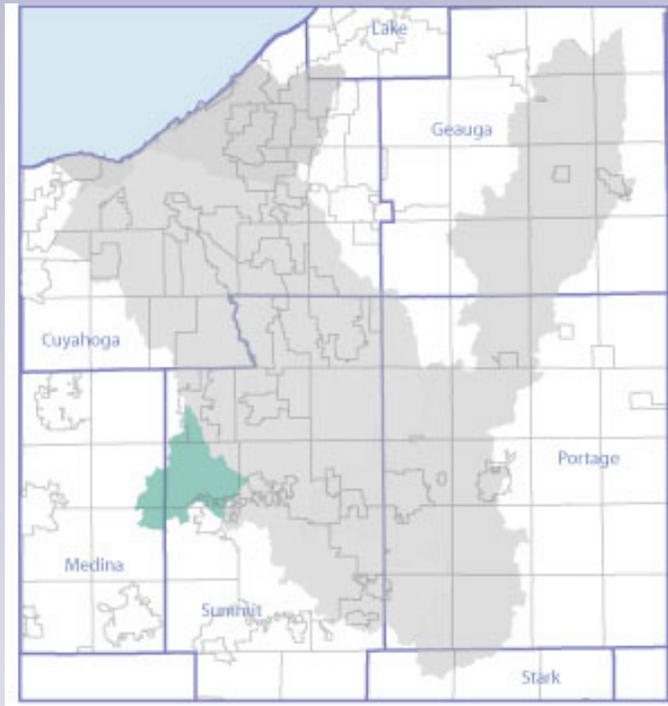
- **The Issue:** Regional Land Conservation
- **The Problems:** Diminishing quantity and quality of open space.
- **The Solutions:**
  - ▣ Identify & prioritize land conservation
  - ▣ Addresses the protection of natural resources at the watershed level.



Land is either a net producer of eco-benefits or a net consumer of eco-benefits.



# Yellow Creek Watershed



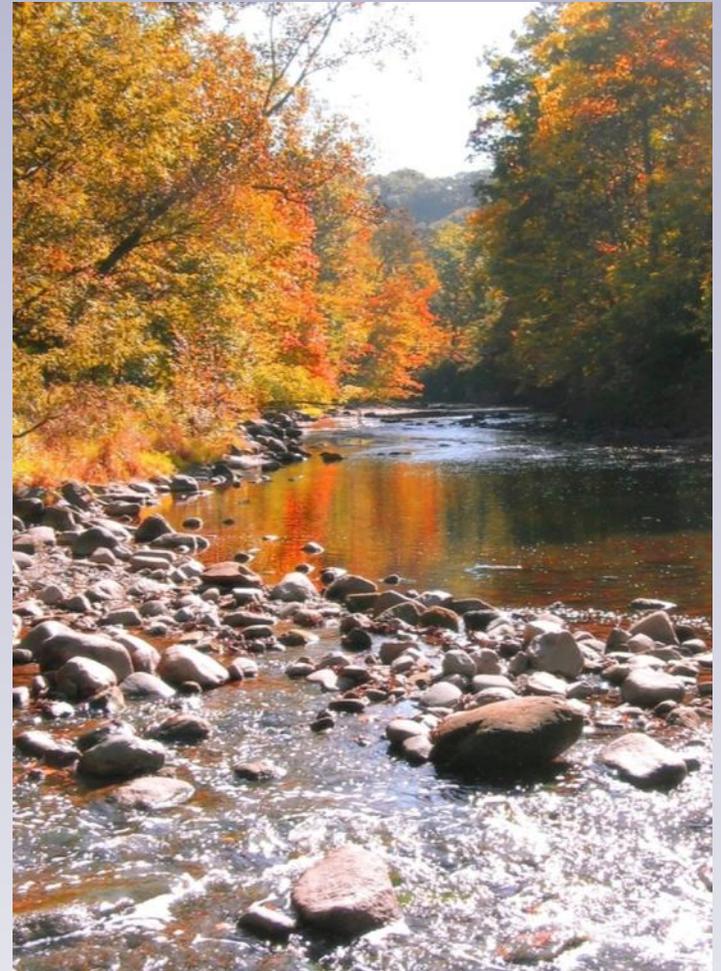


# Community Scale

- **The Issue:** Community Land Use
- **The Problems:** Land use policies that don't leverage green infrastructure.
- **The Solutions:**
  - ▣ Addresses the protection of natural resources in land use policies
  - ▣ Establish goals and strategies
  - ▣ Identify & monitor environmental indicators.
  - ▣ Support conservation/open space land use subdivision standards

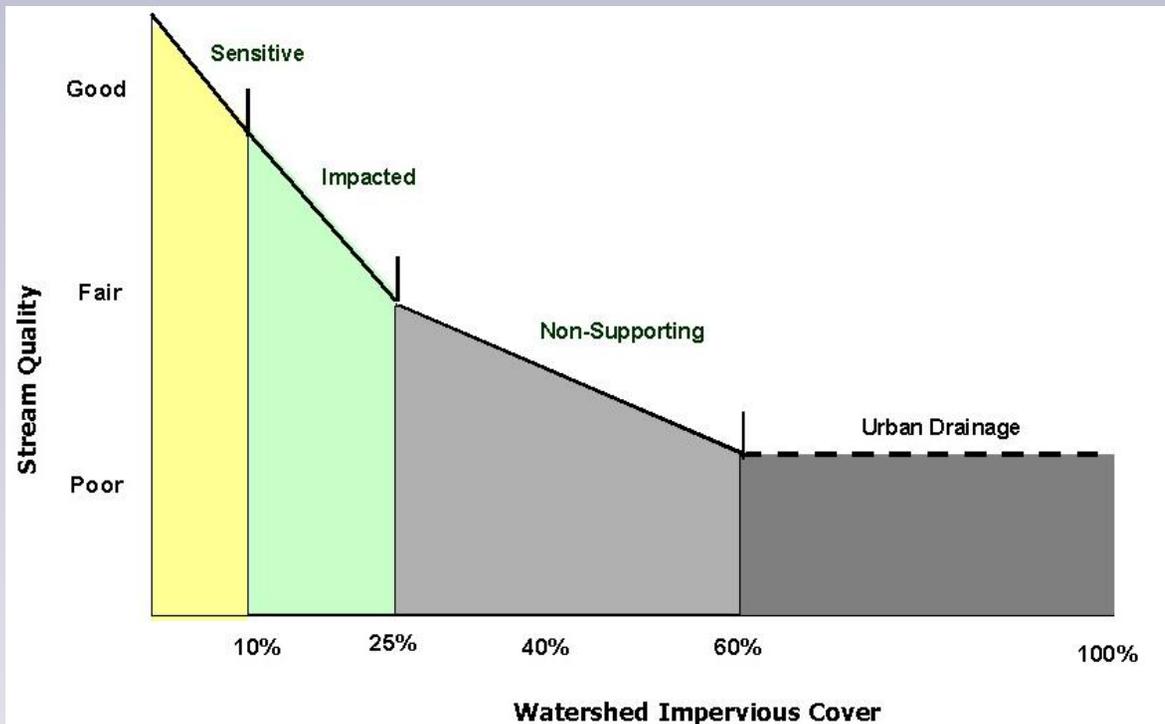
# Indicators: Stream Health

- **Stream assessment:** Site-specific habitat measurements including stream bottom composition, water temperature, and width of riparian vegetation. Indicators of a high quality stream include stable banks with a broad corridor of native vegetation, riffles free of silt deposition, and stable water temperatures.



# Indicators: Impervious Cover

- **Imperviousness:** Assess and try to reduce or mitigate the amount of impervious surfaces – roads, roofs, drives, walks.



# Indicators: Canopy Cover

## National Tree Benefit Calculator

Beta

Overall Benefit

Stormwater

Property Value

Energy

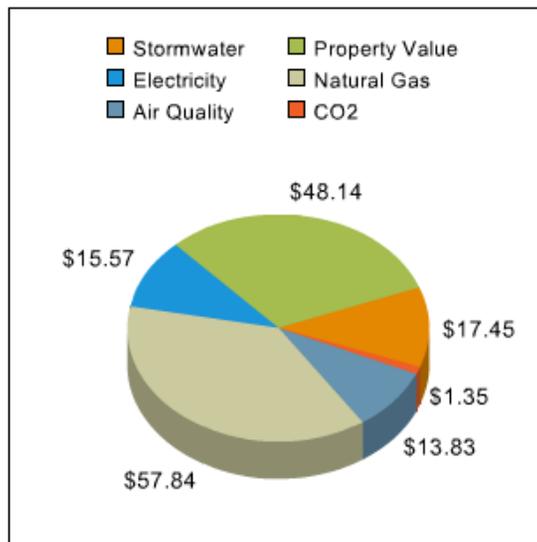
Air Quality

CO2

About

### Breakdown of your tree's benefits

Click on one of the tabs above for more detail



This 18 inch Red maple provides overall benefits of: **\$154** every year.

While some functional benefits of trees are well documented, others are difficult to quantify (e.g., human social and communal health). Trees' specific geography, climate, and interactions with humans and infrastructure is highly variable and makes precise calculations that much more difficult. Given these complexities, the results presented here should be

For every 5% of tree cover added to a community, stormwater runoff is reduced by approximately 2%.

17% (11.3 million gallons) run-off reduction from a twelve-hour storm with tree canopies in a medium sized city (\$226,000 avoided run-off water control costs).

# Site Scale

- **The Issue:** Site Impacts
- **The Problems:** Land development practices that impact community health & welfare.
- **The Solutions:**
  - ▣ Implement low impact design standards or green best management practices.
  - ▣ Promote development practices that reduce, slow and absorb stormwater.
  - ▣ Restore stable streams, wetlands, & meadows.
  - ▣ Lead by example.



# Green Roofs



# Porous Pavement



# Rain Barrel & Cisterns



# Downspout Disconnection



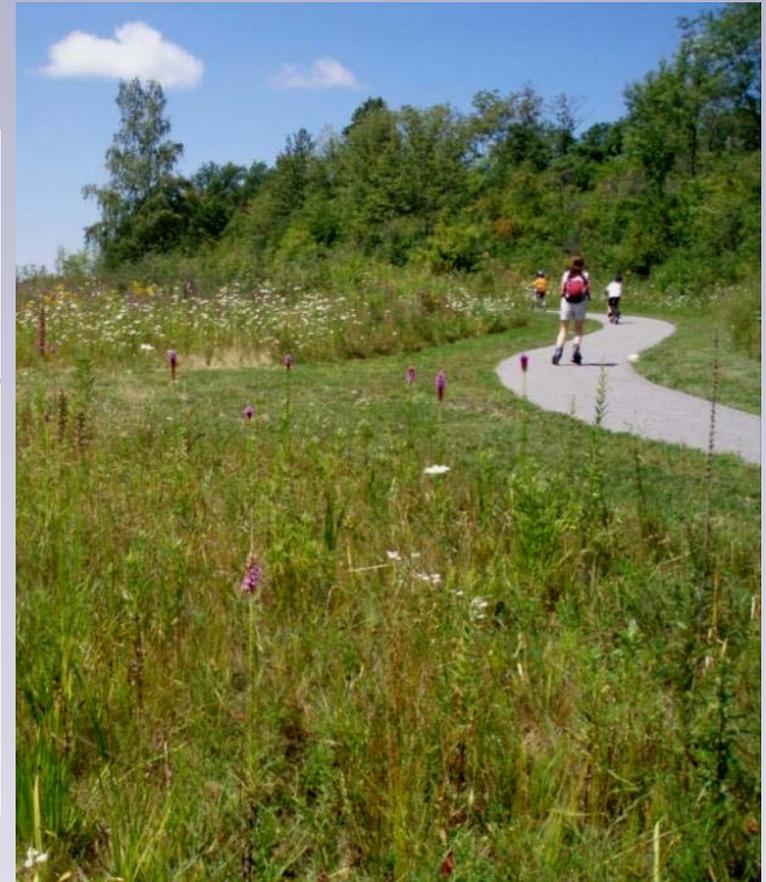
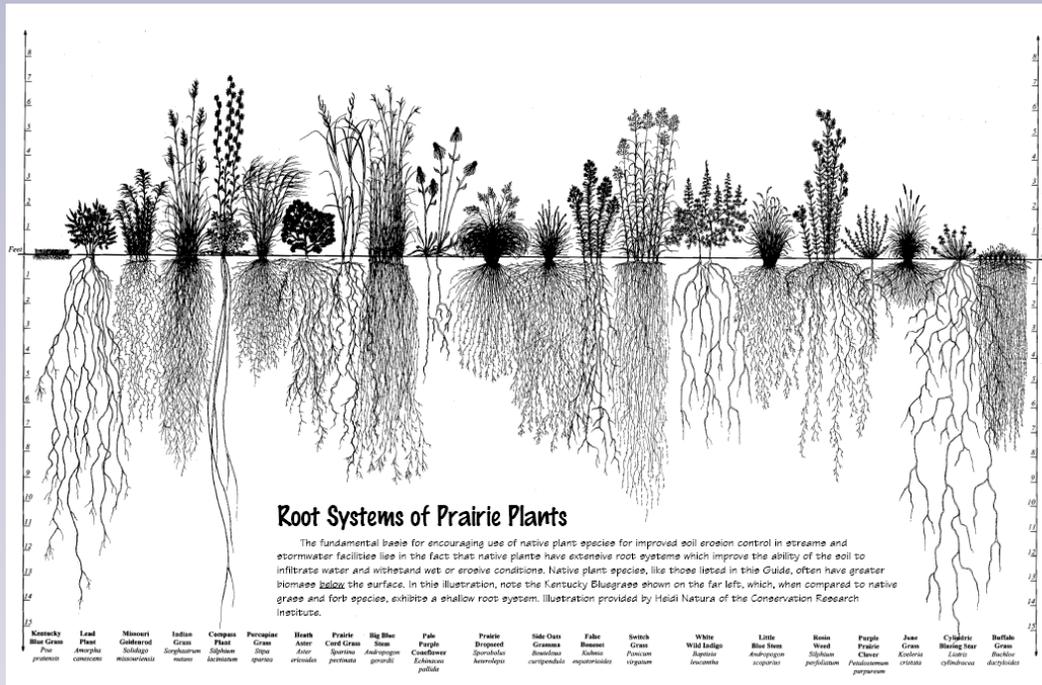
# Constructed Wetlands



# Grass Swales



# Lawn Conversion



# Contact Information

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