Conservation Planning Tools

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WHERE
DO I
START

Planning Process

- Ecological Sites
- Geography
- Geology
- Natural communities
- Vegetation
- Wildlife

Natural Resource Inventory

- With public and community leaders, develop a vision and goals for conservation, consider:
- Ecosystem value
- Ecosystem management
- Equity
- Land ethic
- Stewardship

Community Vision and Goals

- Who
- When
- How much
- **Planning tools**
- Monitor

Implementation Plan

Know your code

Code reviews can uncover unintentional barriers to conservation practices such as a requirement for curbs around parking lot medians or a prohibition on tall plants in landscaping.

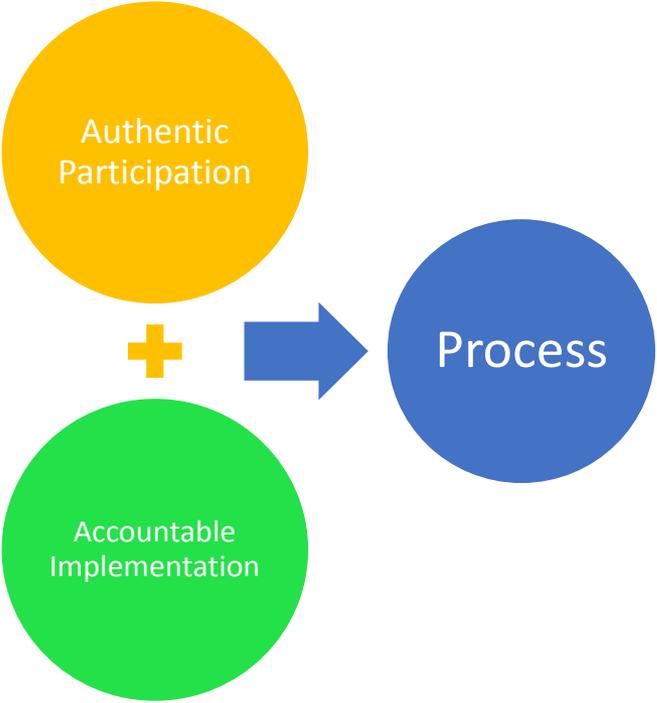

Community Design Center, University of Arkansas

Comprehensive Plans

Comprehensive plans are the foundational policy document for local governments. They establish a framework to guide decisions over the next 10 to 20 years.

Sustainability standards for comprehensive plans can be found in Report 578 from the Planning Advisory Service published by the American Planning Association.

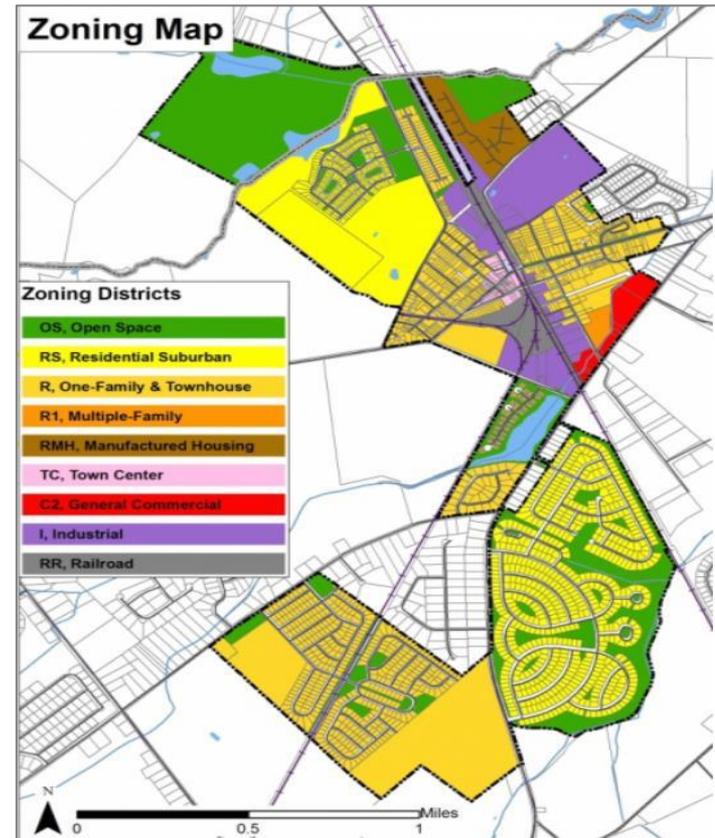# Sustainability Standards for Comprehensive Plans

The Zoning Code

The **zoning code** is the duly approved, enacted, and amended ordinance that controls and regulates land use in the city.

Zoning is the act of dividing a community into various districts and specifying the permitted and prohibited uses for each district. It is the exercise of a community's police powers in which utilization and development of privately owned land is regulated to promote the health, safety, morals or general welfare of the community. Designating land for different uses can protect natural resources, public health, and the economy.

Base Zoning Districts

Base zoning districts use standard zoning classifications for purposes of development regulation specificity. When combined with an **overlay zone**, the base zone is also known as the **underlying zone**. Base zones shall apply unless expressly superseded by overlay zoning provisions.

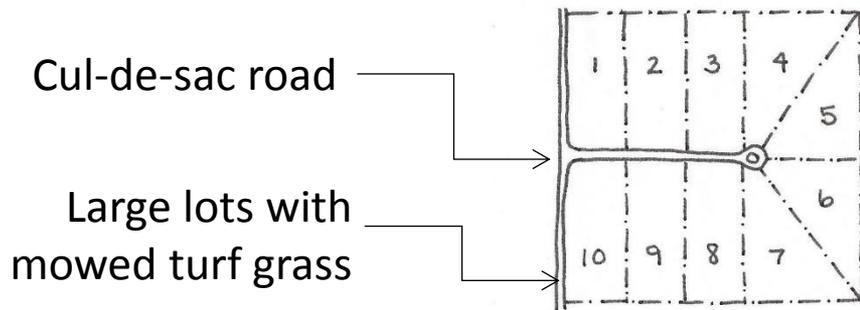https://www.completecommunitiesde.org/planning/landuse/zoning/
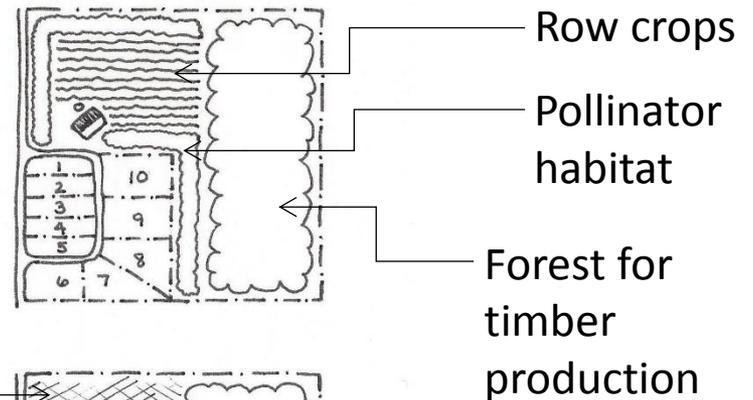
Base Zoning Districts

- **Forestry zoning** protects a critical mass of commercial timberland and separates forestry operations from conflicting non-forestry land uses.

- **Floodplain zoning** implements public health and safety objectives by preventing development in areas where flooding could damage life and property.

- **Cluster zoning** allows for a development approach in which building lots may be reduced in size and buildings sited closer together, usually in groups, provided that the total development density does not exceed that which could be constructed on the site under conventional zoning and subdivision regulations.

Large-lot, rural residential zoning versus rural cluster zoning

Large-lot layout

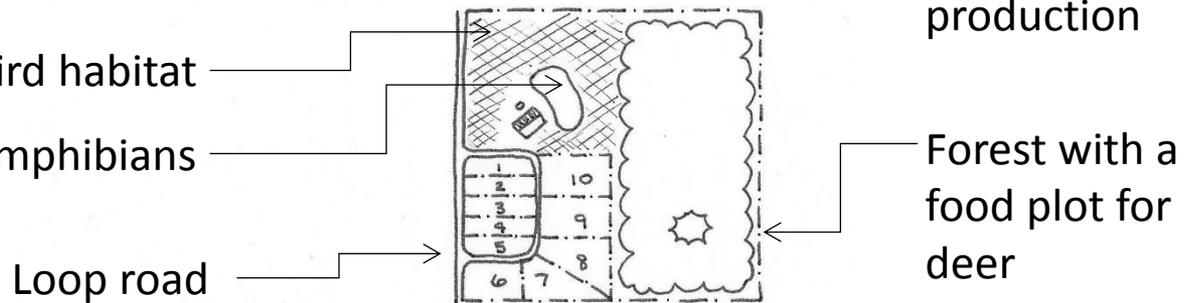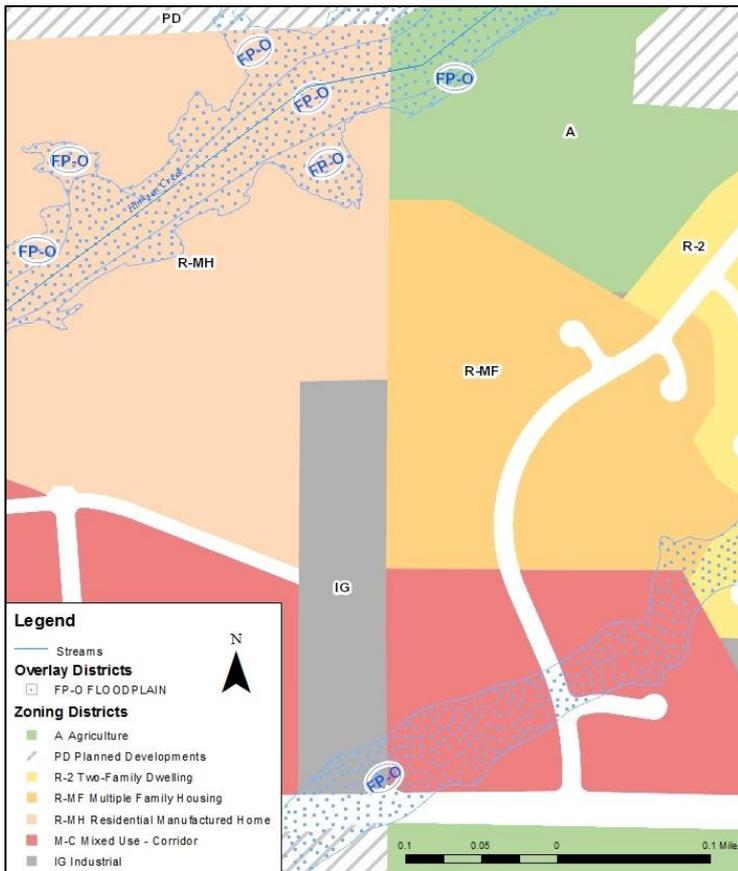Agro-forestry layout

Cul-de-sac road

Large lots with mowed turf grass

Row crops

Pollinator habitat

Forest for timber production

Grassland bird habitat

Pond for fish and amphibians

Loop road

Forest with a food plot for deer

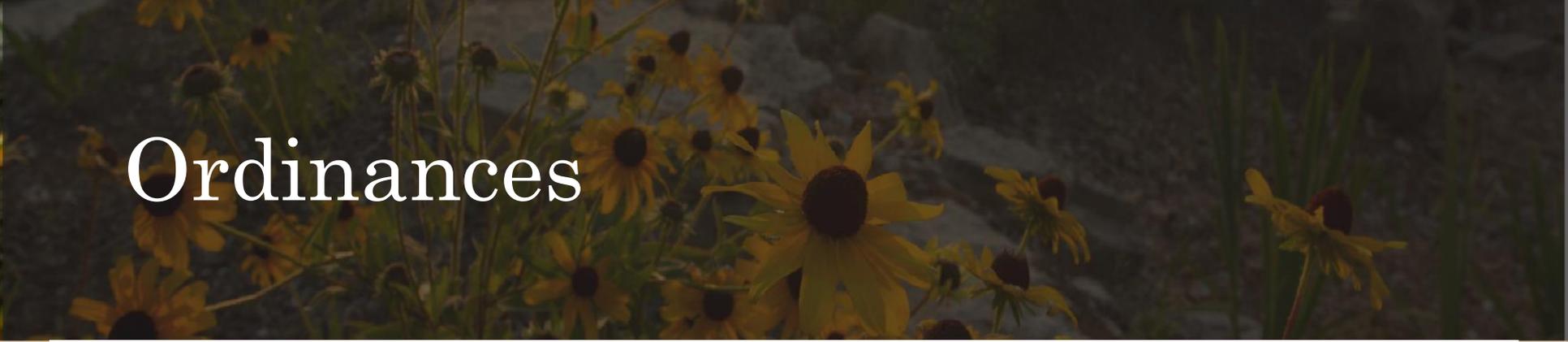Wildlife habitat layout

Overlay Zoning Districts

City of Columbia, Missouri

Overlay zoning districts address special land use circumstances or environmental safeguards and are superimposed over underlying zoning district(s). Permitted uses in the underlying zoning district shall continue subject to compliance with the regulations of the overlay district.

Overlay Zoning Districts

- **Green infrastructure overlay zoning** is explicitly concerned with establishing or enhancing a green infrastructure network, rather than protecting discrete natural features.

- **Lake watershed overlay zoning** protects the quality of water in a lake from nonpoint and point-source pollution by regulating land uses within the lake's watershed, while allowing flexibility of land use consistent with maintaining such quality.

- **Wildlife habitat overlay zoning** is a tool that can be used to reduce habitat fragmentation resulting from development and subdivision of land. It provides additional guidance for open space approaches to subdivision layout.

Ordinances

Ordinances are laws or regulations set forth and adopted by a governmental authority, usually a city or county.
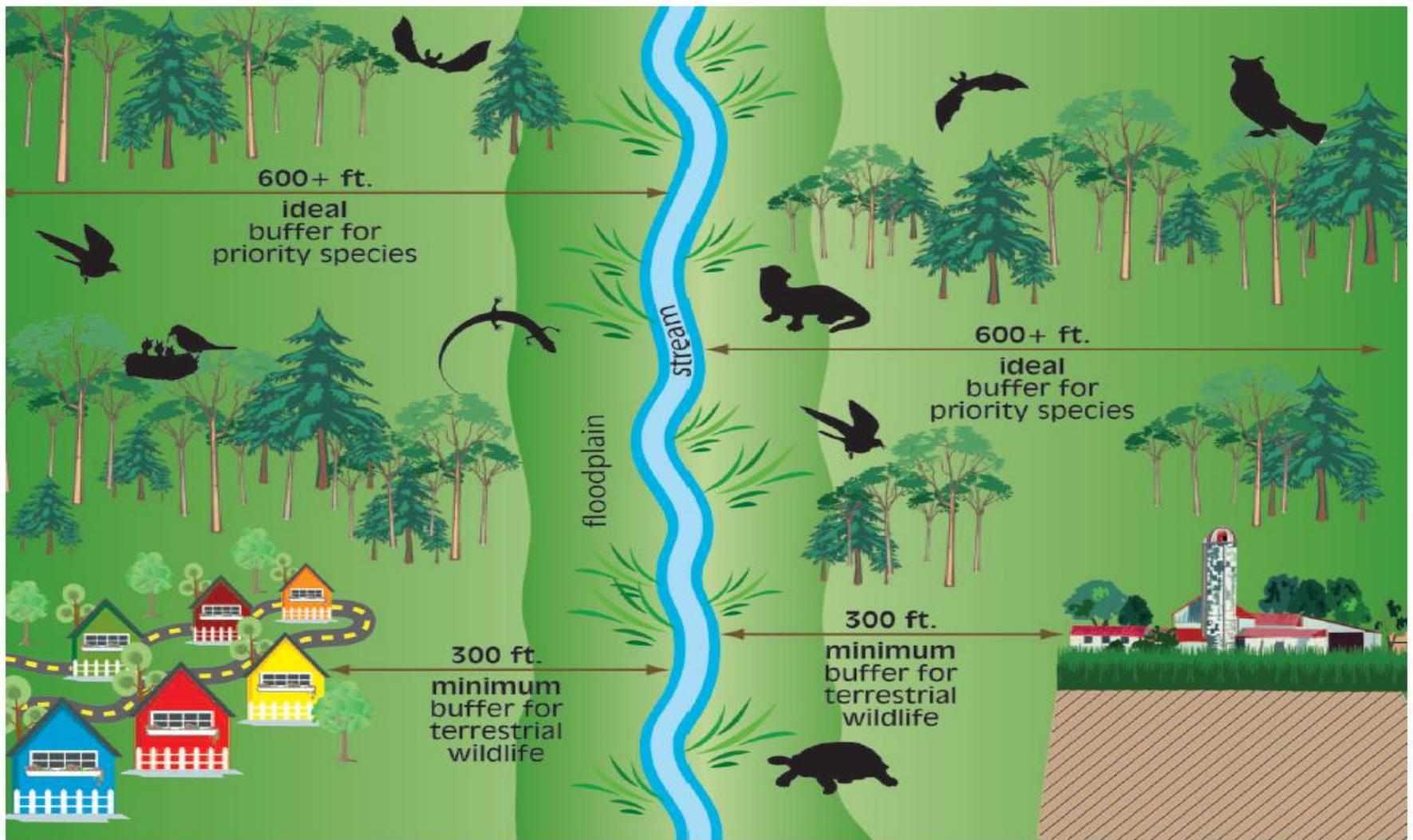
- **Tree preservation and protection ordinances** are used for the preservation, planting, maintenance, and removal of trees within a city.

- **Weed ordinances** are a specific type of plant ordinance that regulates nuisances such as unkempt landscapes and invasive, nonnative plant species.

Fort Lauderdale, FL

Turtle Nesting Beach 🐢
Street Lights Turned Off
Mar Thru Oct
NEXT 1 1/2 MILE

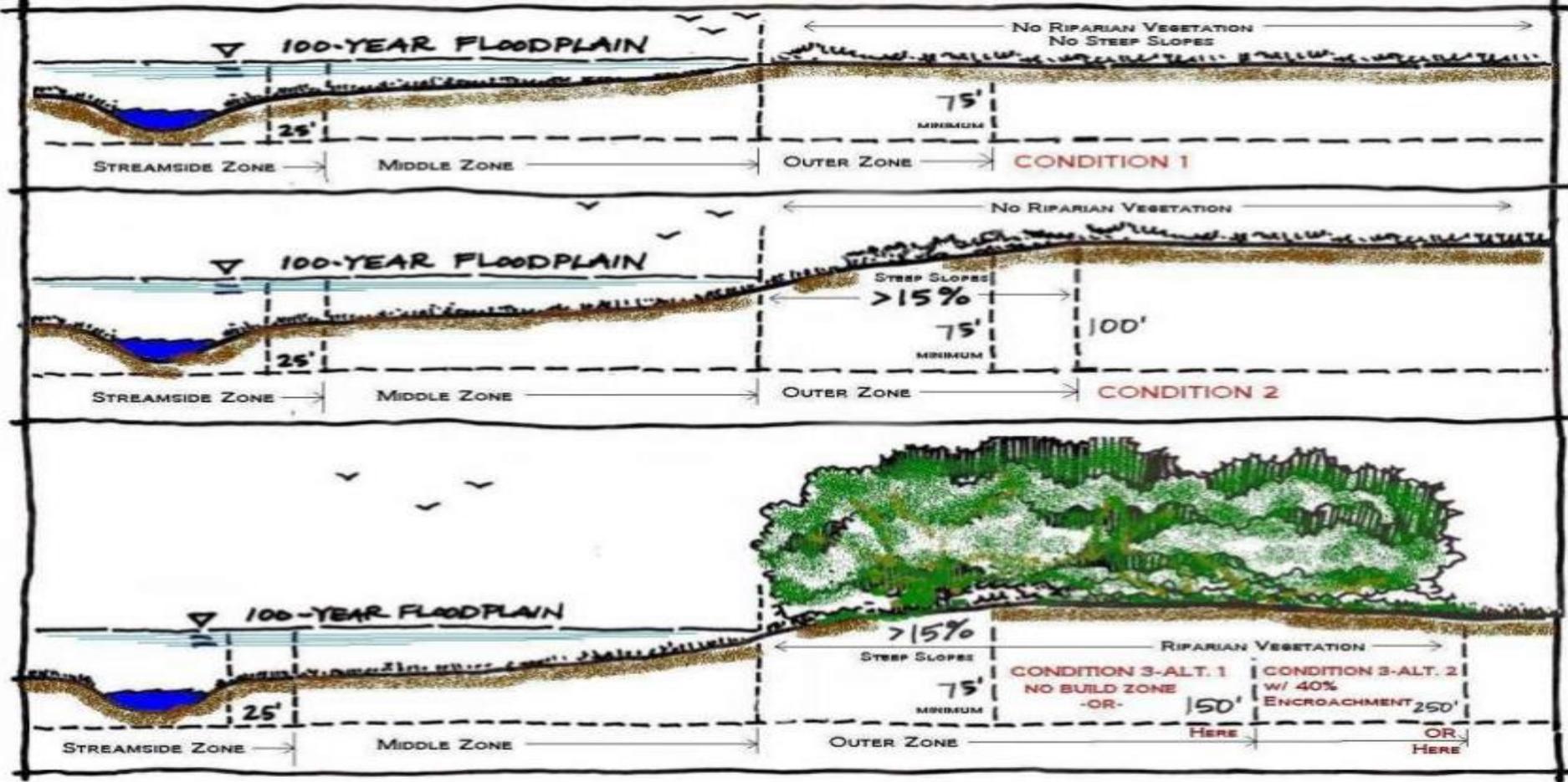https://media.mnn.com/assets/images/2015/08/ft-lauderdale-sea-turtle-sign.jpg.838x0_q80.jpg

Outdoor lighting ordinances are a regulatory tool for communities to control light pollution including glare, light trespass, and skyglow. Communities adopt this type of ordinance because they recognize the night sky as a natural resource or because they want to protect the habitat of nocturnal wildlife.

600+ ft.
ideal
buffer for
priority species

600+ ft.
ideal
buffer for
priority species

stream

floodplain

300 ft.
minimum
buffer for
terrestrial
wildlife

300 ft.
minimum
buffer for
terrestrial
wildlife

GRAPHIC BY KIMBERLY KC SCHOTT, RED GATE DESIGN

Stream set back or buffer ordinances create a "buffer zone" between a stream and adjoining land uses, by specifying where construction of buildings and other infrastructure is or is not permitted. The distance of the set back is based on a community's goals such as protection of water quality or riparian habitat.

TYPICAL CROSS SECTION DIMENSIONS

Stream Setback Ordinance adopted by Kansas City, MO are intended to protect public safety and public infrastructure investments while mitigating the adverse environmental impacts that development can have on streams and associated natural resource areas

Design & Development Regulations

Codes are mandatory and come in two basic formats: prescriptive and performance. A prescriptive path is a fast and definitive approach to code compliance where construction materials and equipment must meet certain levels of stringency. Performance-based codes are designed to achieve particular results, rather than meeting prescribed requirements for individual components. Outcome-based codes are becoming a third option. They establish a target and provide for measurement and reporting to assure that the development performs at the established level.

Building Codes

Photo: New York Audubon's "Bird-Safe Guidelines"

Photo: Lights Out SF

Bird-safe building codes aim to reduce bird deaths from collisions with windows by addressing items that enable birds to better see buildings such as exterior construction materials and lighting practices.

Design & Development Regulations

Standards establish the criteria against which a design can be judged. They can be used to direct or guide the external features of a development, as well as the relationships within the development site and between the development and adjacent uses. Common standards related to building practices are created through consensus processes by organizations such as the American National Standards Institute (ANSI). Supporting the governance of standards and certifications is the International Standards Organization (ISO), which defines and develops worldwide standards that frequently become law or form the basis of industry norms.

Design Standards

- **Landscape design guidelines** communicate desirable plant selection and design qualities for planting of trees, shrubs, and other vegetation.

- **Site design standards** control the design and layout of new streets, lots, and parking areas and establish minimum setbacks or build-to lines for new structures. Through these standards, localities have considerable influence over the amount of impervious cover added by new development.

"Landscape Guide for Stormwater Best Management Practice Design – St. Louis, Missouri"

Design Standards

Edminster Hinshaw Russ, Davidson Landscape Architecture, Legend Homes

Green infrastructure design standards provide guidance to developers or public agencies regarding how to integrate natural resources into infrastructure.
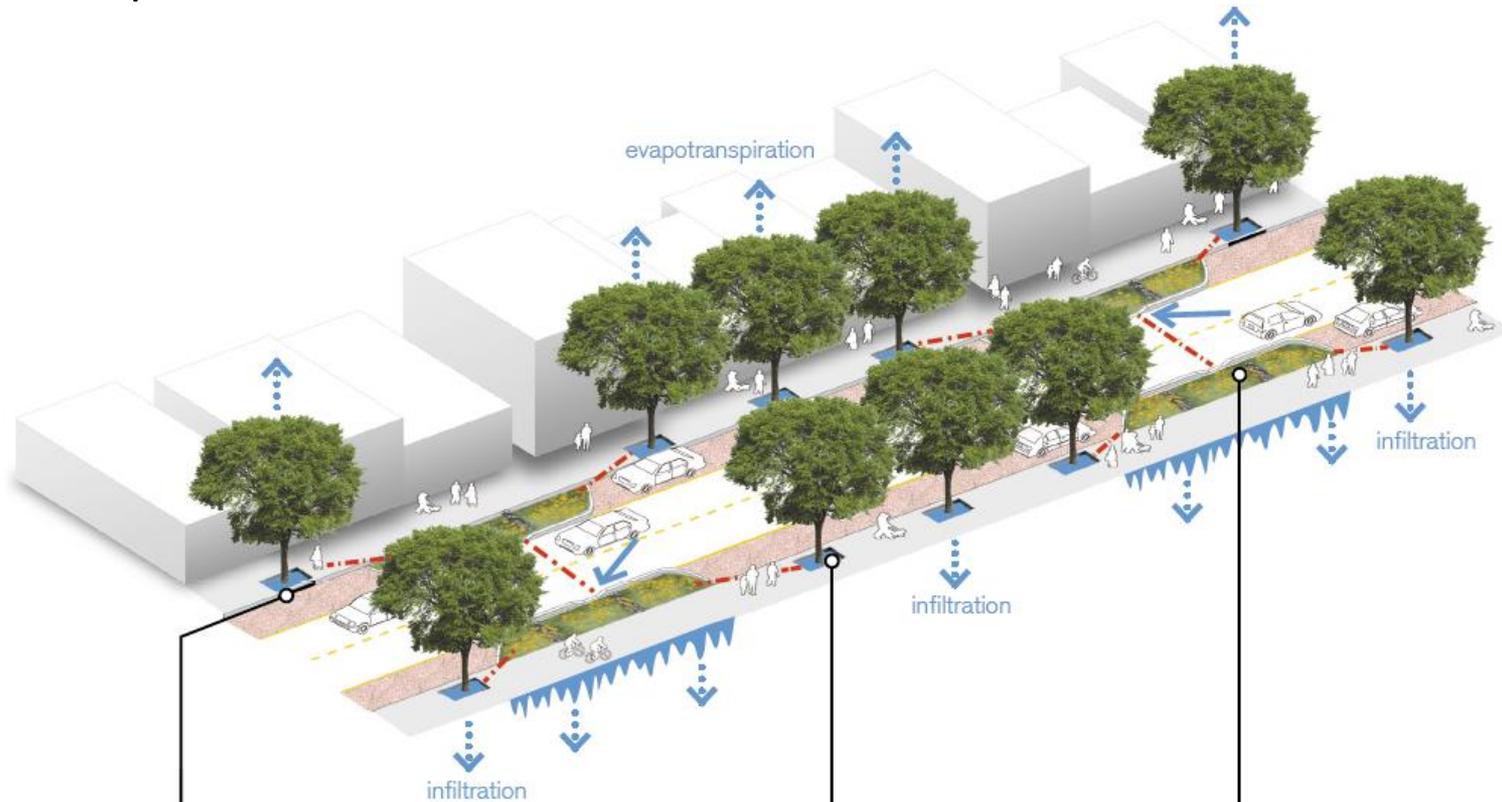
Development Strategies

Development Strategies establish an approach, pattern, layout, or location for development that achieves site-specific or community goals. Some strategies are intended to maximize creative design flexibility while others focus on natural resource conservation, human health considerations, or existing infrastructure.

Development Strategies

- **Infill development strategies** locate new development on vacant or under-used parcels within existing urban areas that are already largely developed instead of on greenfields that contribute to urban sprawl.

- **Mixed-use development strategies** recognize that many land uses and activities are compatible and can be co-mingled to promote physical development at a human scale.

- **Pedestrian-oriented development strategies** are designed to make movement on foot attractive and comfortable and to reduce dependence on motorized vehicles for short trips.

Low-impact development strategies mimic natural processes that result in the infiltration, evapotranspiration, or use of stormwater to protect water quality and associated aquatic habitat.

evapotranspiration

infiltration

infiltration

infiltration

Slow
Cut curbs to allow for stormwater flow into curb extensions or other LID facilities. *Flow Control Devices* pp. 148-149

Spread
Construct tree box filters along the right-of-way to filter and attenuate stormwater runoff during **one to two-year storm events**. Connect in a series or to rain gardens using perforated pipe to handle larger events. *Tree Box Filter* pp. 176-177

Soak
Use curb extensions to retrofit existing parking lanes with rain gardens. This reduces impervious surface area, and encourages infiltration during **10 to 25-year storm events**. *Rain Garden* pp. 178-179

Growth Management Strategies

Growth Management Strategies consist of techniques employed by a community that allow it to grow purposefully and avoid the pitfalls of urban sprawl. A community's growth management strategy enables it to determine its amount, type, and rate of growth, and channel it into designated areas.

Growth Management Strategies

- **Greenbelts** used as a growth management strategy result in a linked network of protected natural or working lands that surround a city and buffer areas beyond the city from urban and suburban growth.

- **Smart Decline** is a type of growth management strategy that focuses on improving the lives of existing residents rather than exhaust city resources through hopeless efforts to increase population.

- **Transit-Oriented Development (TOD)** is a type of growth management strategy that concentrates development around transit stations and along transit lines so as to make transit use as convenient as possible.
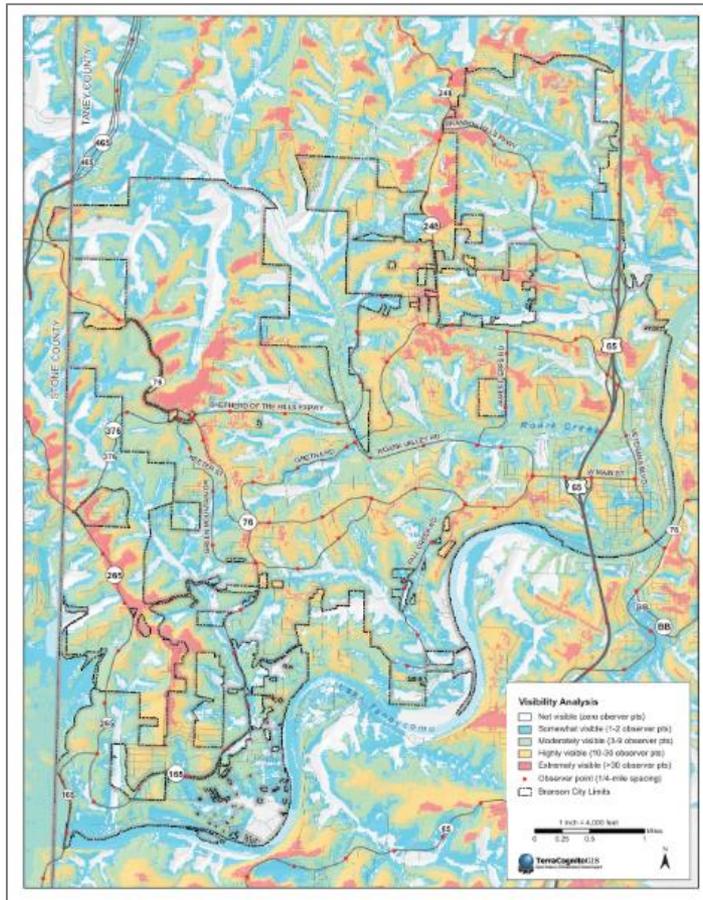
Management Plans

Management Plans establish a strategy and/or a work plan for achieving resource goals within a defined geography. They provide inventory and assessment information for the resource under management, they identify action items needed to implement the plan, and they estimate the cost of those actions. Functional plans establish goals and make recommendations regarding best management practices and proposed policy changes. Management plans are written to provide guidance on how to protect natural resources or mitigate nuisances such as invasive species

Management Plans

- **Integrated Water Resource Management Plans** are an emerging type of plan in which all aspects of how a community uses water, and how those uses relate to each other, are considered in a comprehensive manner. This one plan takes the place of individual water plans such as: stormwater, wastewater, potable supply, and water quality.

- **Invasive Species Management Plans** contain an inventory and assessment of undesirable plants found within a selected geography along with recommendations for how to control or eradicate them.

- **Watershed Management Plans** provide assessment and management information for land that is contained within a river basin.

Management Plans

A **viewshed management plan** limits development of areas within view from a defined observation point and is beneficial in communities that wish to protect aspects of their cultural heritage such as rural scenery or protect scenic views that are vital to an established ecotourism industry.

Branson's Community Plan 2030 contains a visual assessment survey of hillsides as seen from the major tourism routes through town. Regulations and development standards were established for areas identified as sensitive lands.
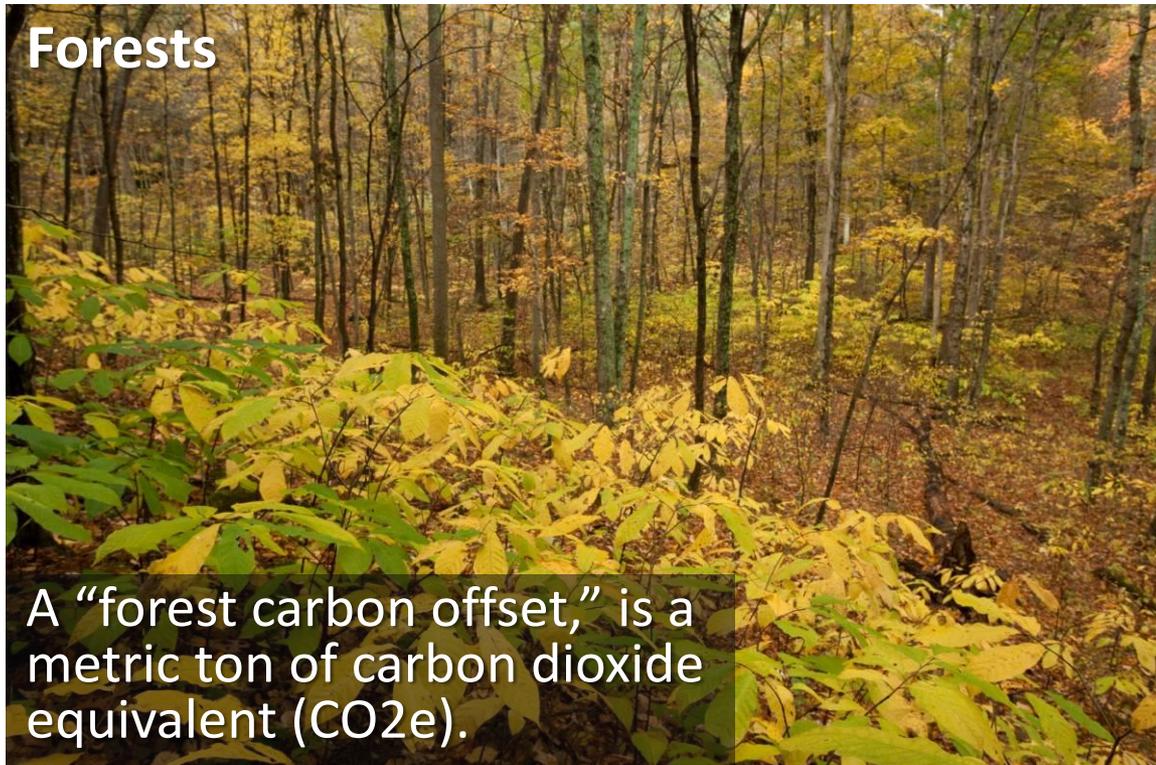
Property Rights

Property Rights are privileges, often imagined as a "bundle of sticks," that are associated with land ownership and balanced with state and local governments' obligation to protect health, safety, and general welfare of citizens. Property rights include right to occupy and use property for an economically productive purpose, to exclude others, to convey title or ownership interests, and to convey by will the property to others.

Trading Programs: Carbon Credits

Greenhouse gas emitters may purchase carbon credits to compensate for emissions occurring elsewhere.

Forests

Prairies

A "forest carbon offset," is a metric ton of carbon dioxide equivalent (CO2e).

Transfer of Development Rights (TDR) is a program that exist where sending zones and receiving zones have been established. Developers may purchase density bonuses from landowners whose property will remain undeveloped for habitat or as working landscape.

Property Rights

- **Conservation easements** are voluntary legal agreements between a landowner and a land trust or government agency that permanently limit the use of land in order to protect its conservation values.

- **Mitigation banking** preserves and/or restores large natural systems or areas for the purpose of mitigating in advance the adverse effects of development that occurs elsewhere.

Citizen Science Opportunities

- Missouri Forestkeepers Network

- Missouri Master Naturalists

- Missouri Stream Teams

- **Nature in the City** is a program in Fort Collins, CO where the public helps track wildlife

City Nature Challenge

Throughout this past year, the BiodiverseCity St. Louis team has been working with stakeholder organizations to kick-start a key biodiversity target of the OneSTL Sustainability Plan: By 2025, 100 percent of counties in metropolitan St. Louis are using a regional biodiversity vision, atlas, and action plan to guide their planning, policies, and practices in ways that increase habitat connectivity, ecological functionality, and quality of life for all. Just last month, we announced the launch of **BiomeSTL: Biodiversity of Metropolitan St. Louis**—a regional vision, atlas, and action plan that calls upon everyone everywhere to put healthy, vibrant lands and waters at the center of how we connect with, design, plan, and sustain our communities. We are currently recruiting multi-disciplinary teams of people to help develop and advance core elements of this cool initiative. If interested in learning more and getting involved, email us at biodiversecitystl@mobot.org.

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