

# Conservation Design: Award Winning Projects in the Blackberry Creek Watershed

FREP Noon Network  
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# Creative Design and BMPs are Receiving Increased Attention

- Federal NPDES and wetland permitting requirements
- Countywide stormwater agency requirements
- Community aesthetics
- Groundwater concerns
- Developer advantages

# Federal Wetland Permitting Requirements

- Regional wetland permitting guidelines stress a BMP *treatment train* approach for sites adjacent to wetlands
- Runoff infiltration is a major emphasis



# County Stormwater Agency Requirements

- Most counties *encourage* a runoff reduction hierarchy -- detention alone is not sufficient
- DuPage County formally *requires* a BMP-based site design approach (Water Quality Best Management Practices Technical Guidance)



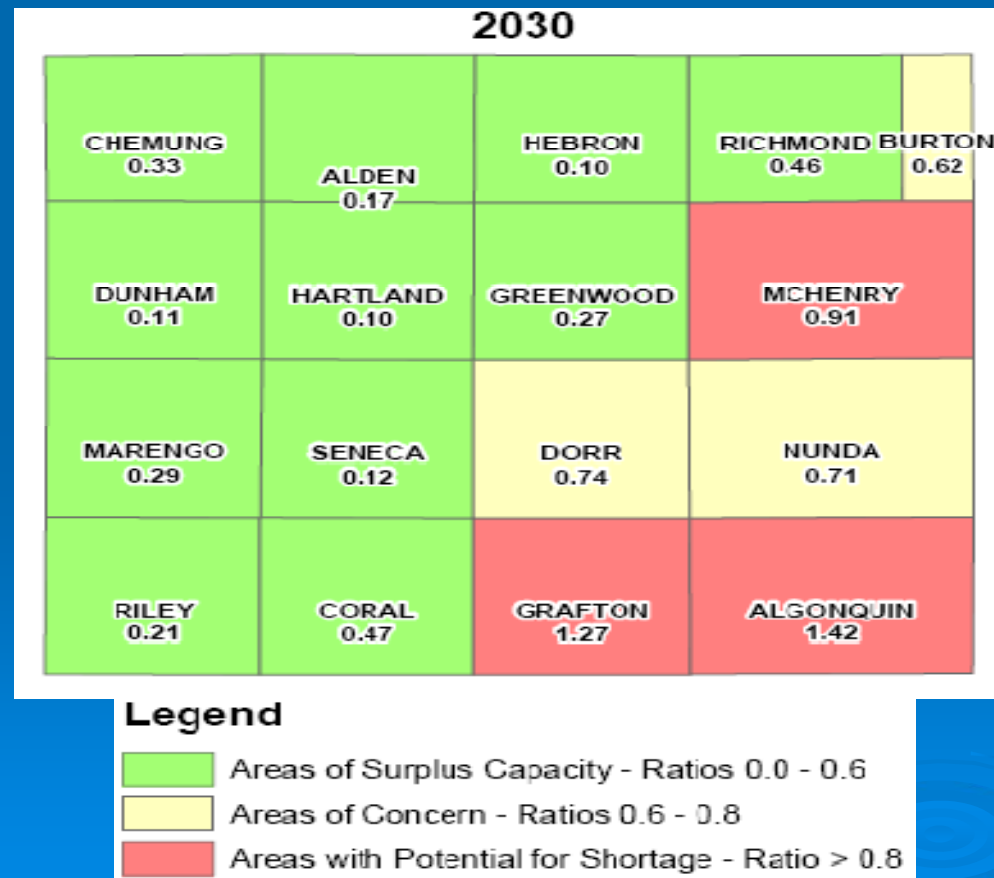
# Community Aesthetic Concerns

- Some communities are tiring of “cookie cutter” developments
- Prefer the aesthetics of creative conservation designs
- E.g., the Aurora Countryside Vision Plan



# Groundwater Protection Concerns

- Communities are realizing that conventional development may not protect groundwater recharge



# Developer Advantages

- Reduces development costs for site work and stormwater management
  - NAHB has documented an estimated 34% savings in infrastructure costs
- Open space can provide a marketing advantage and allow for lot premiums
- Can reduce permitting hurdles – time and costs
- Some communities offer density bonuses
- Can reduce conflicts with local conservation and watershed groups





# What is Conservation Design?

- Depends on who you ask....
  - Low Impact Development (LID)
  - Conservation Design (CMAP, Chicago Wilderness, others)
  - Conservation/Open Space Design (Randall Arendt et al)



# Low Impact Development Themes

- Preserve Open Space and Minimize Land Disturbance
- Protect and Incorporate Natural Systems as Design Elements (e.g., wetlands, stream/wildlife corridors, woodlands)
- Utilize Neo-Traditional Street and Lot Layouts and Designs
- Decentralize and Micromanage Storm Water at its Source Using LID Storm Water Management Practices



# Conservation Design Procedures (Arendt)

- *Work with* the natural features of the site.
- Plan the development in a step-wise fashion:
  - Identify and preserve all natural areas.
  - Locate building areas to take advantage of open space and scenic views.
  - Design the street network to preserve natural areas and opportunities for future connectivity.
  - Establish lot lines and lot sizes in order to take maximum advantage of conservation subdivision concepts.
  - Prepare engineering plans to identify essential utilities and to integrate water management with open space.

# LID/Conservation Design Techniques

- Preserve open space and minimize land disturbance
- Protect natural areas
- Use natural landscaping in common areas
- Reduce impervious areas (e.g., street widths)
- Use creative street and lot layouts and designs
- Treat precipitation and runoff at its source



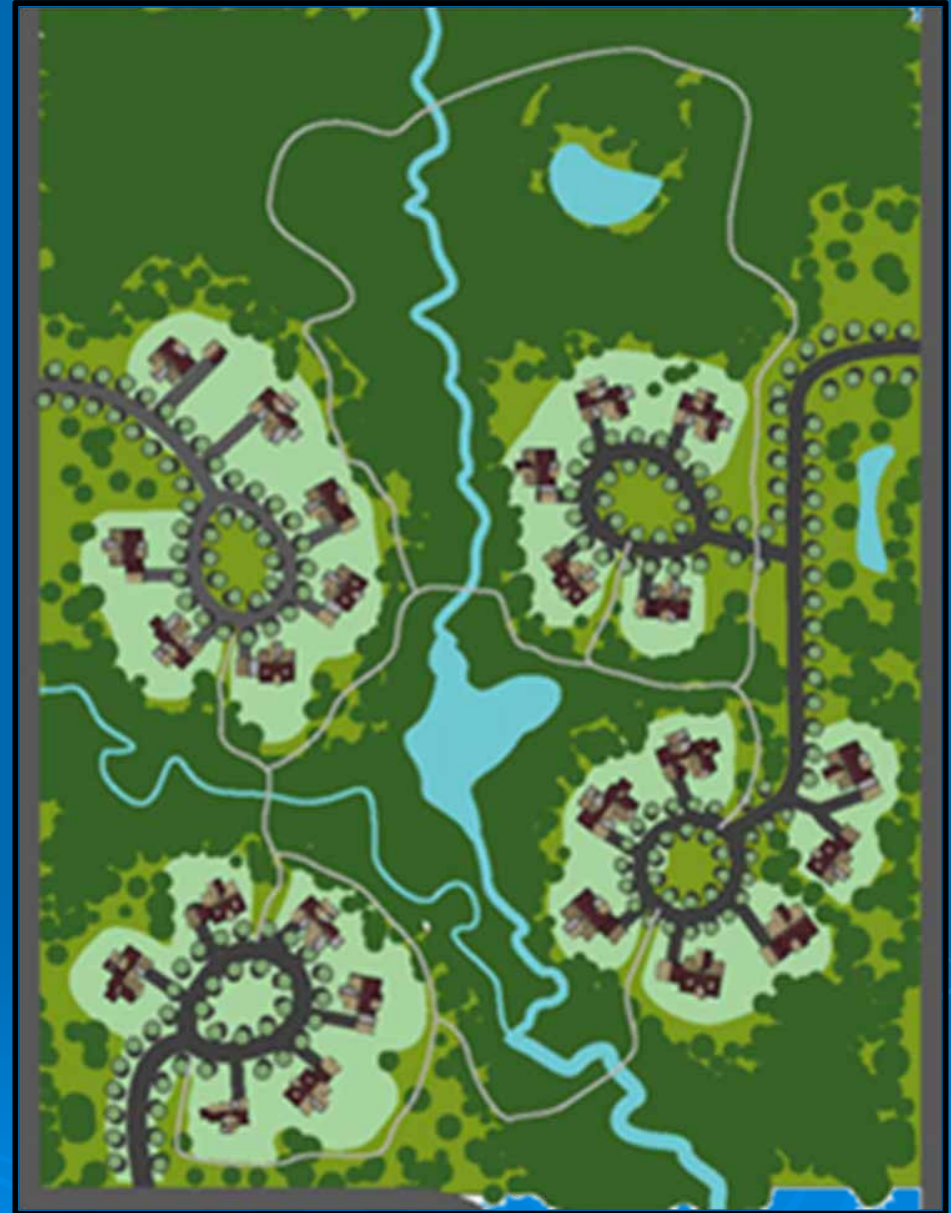
# Protect Natural Areas

## Not Just Wetlands and Floodplains



# Cluster Residential Areas

- Protects natural areas
- Reduces mass grading
- Reduces impervious surfaces and runoff

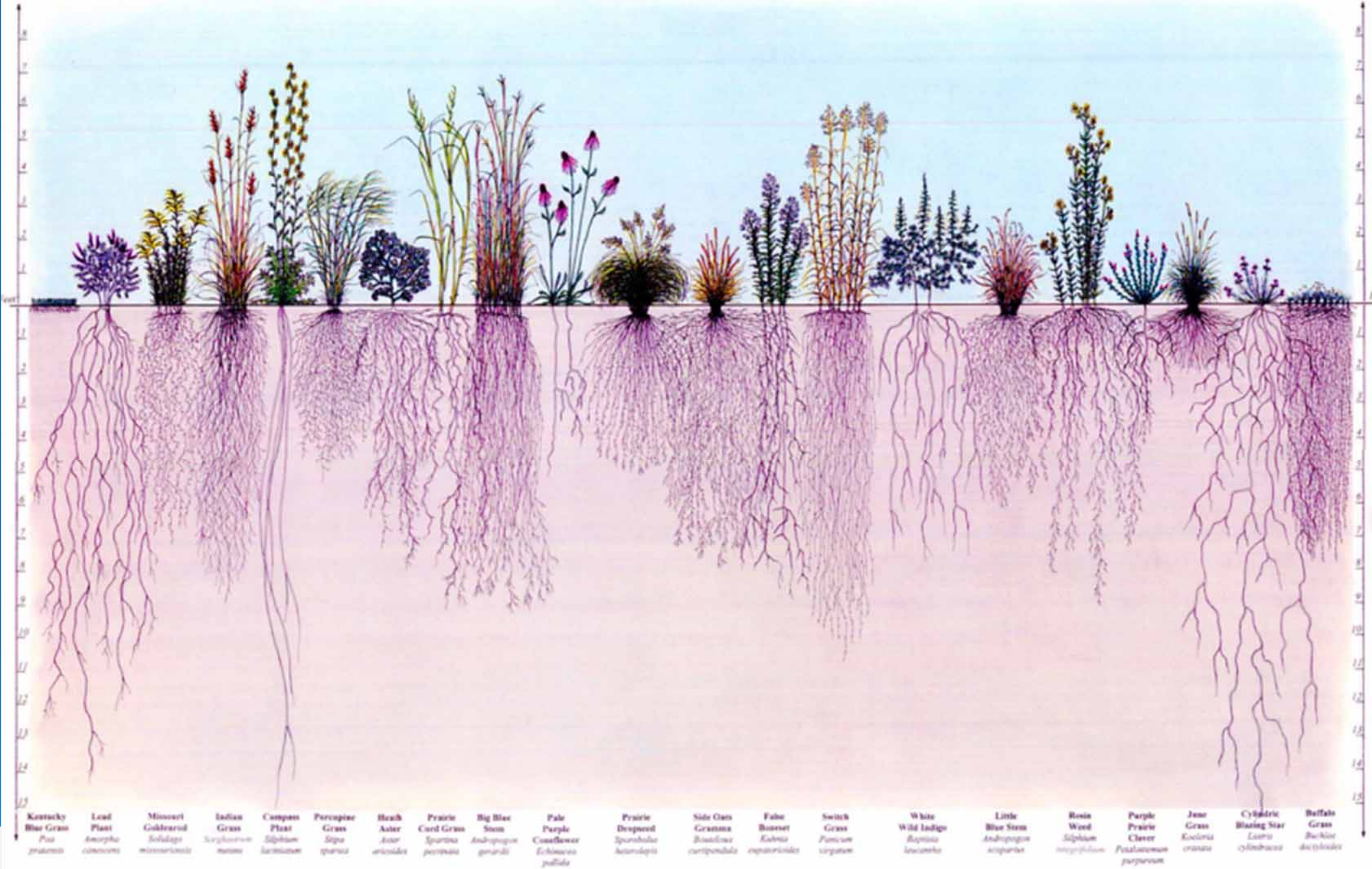




# Use Natural Landscaping in Common Areas







Root Systems of Prairie Plants

# Reduce Impervious Areas (e.g., street widths)

- Typical wide suburban streets contribute substantial runoff
- Questions re. safety issues (Institute of Traffic Engineers)





# Use Creative Street and Lot Layouts and Designs

- Reduce building setbacks and driveway lengths



# Use BMPs to Treat Precipitation and Runoff at its Source





# Detention Basin Design: Emulate Natural Lakes and Wetlands

- Naturalized basins are more effective at removing stormwater pollutants
- Can reduce nuisance goose populations
- They also can enhance site aesthetics





# Last but not least:

## *Restoration and Management of Natural Areas*

- Preservation of natural areas, by itself, does not ensure their long-term viability.
- Regulatory agencies commonly require enhancement and long-term management.
- The Corps of Engineers is now recommending “third party” management

# Basic Elements of Restoration and Management

- Remove invasive brush and weeds
- Plant native grasses and wildflowers
- Perform regular controlled burns
- Monitor for performance criteria





# Wetland/Prairie Restoration



# Institutional Arrangements for Natural Area Management

- Identify Homeowners Association responsibilities (typically with backup Special Service Area option)
- Specify management requirements and funding in covenants
- Third party approaches:
  - Donation to park or conservation district
  - Conservation easement with land trust

# Blackberry Creek Conservation Developments

➤ Settlers Ridge, Sugar Grove

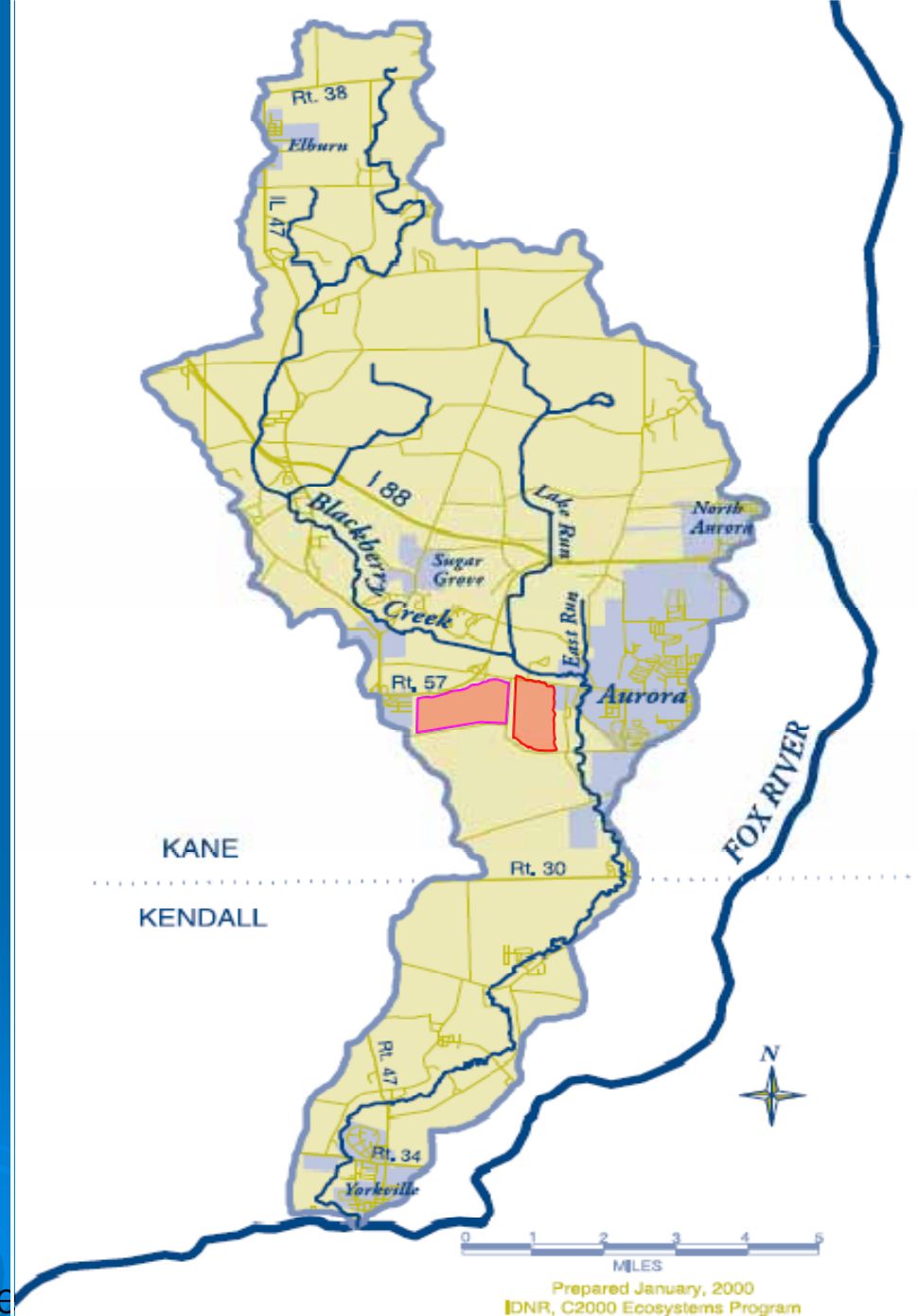


➤ Ingham Park, Aurora



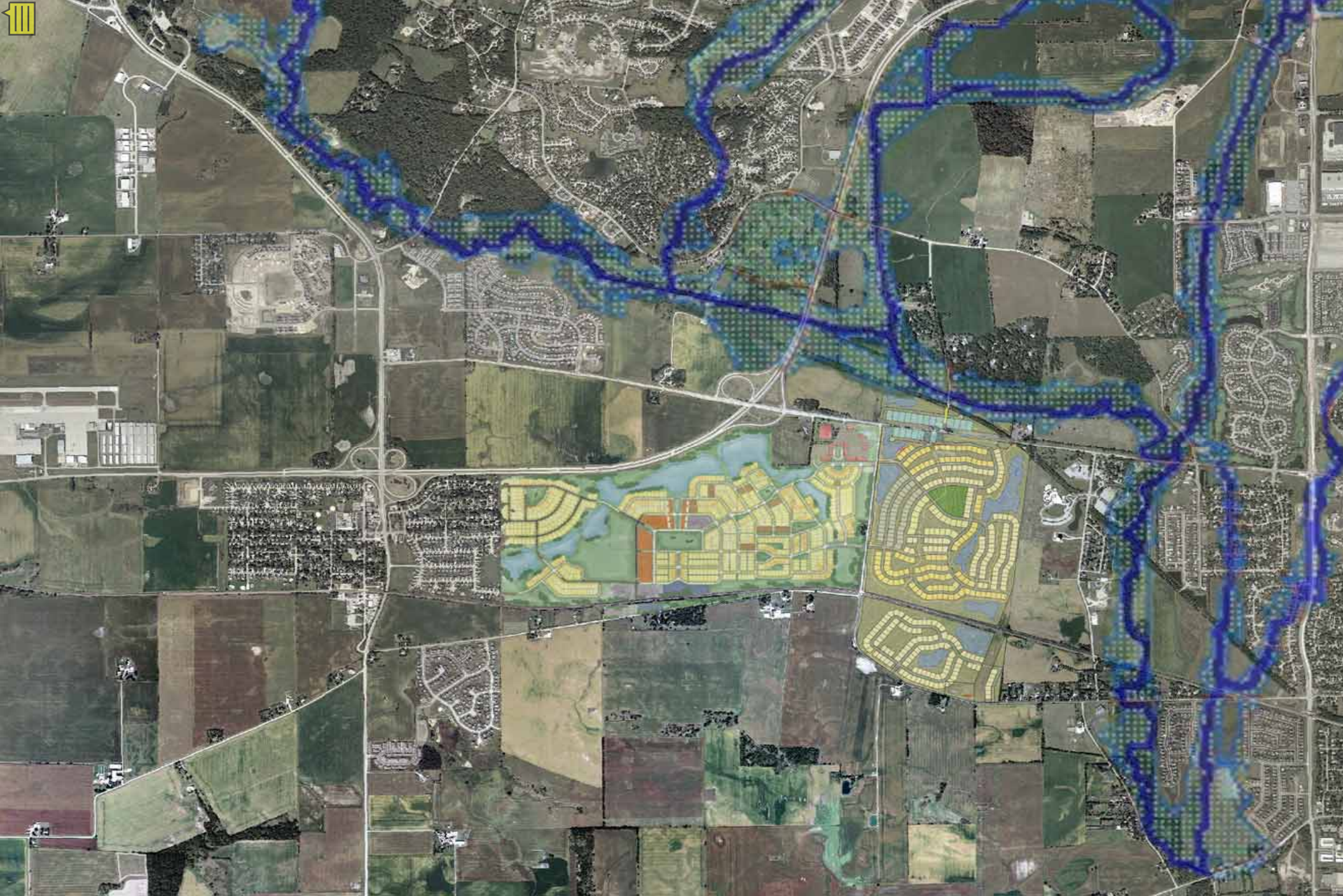


# Watershed Location



CW Gre









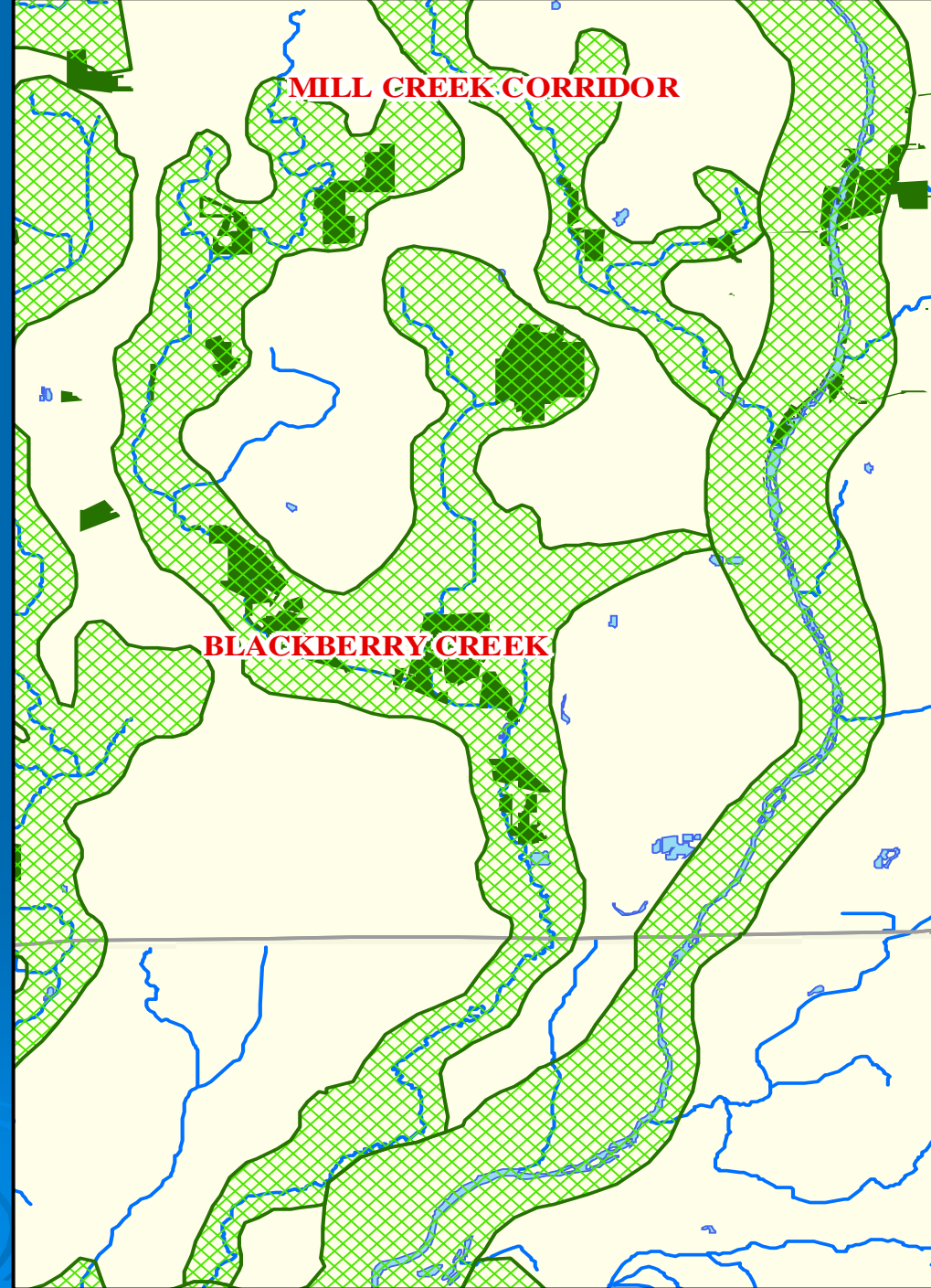
# Blackberry Creek Area Development Guidelines

- Chicago Wilderness Green Infrastructure Vision
- Blackberry Creek Watershed Management Plan
- Blackberry Creek Alternative Futures Analysis
- Aurora Countryside Vision Plan



# Chicago Wilderness Green Infrastructure Vision

## Blackberry Creek Resource Protection Area



# CW Resource Protection Priorities

- Stream greenway protection
- Open space acquisition
- Conservation development

# Blackberry Creek Alternative Futures Project

- Identified conservation design templates as alternatives to conventional development



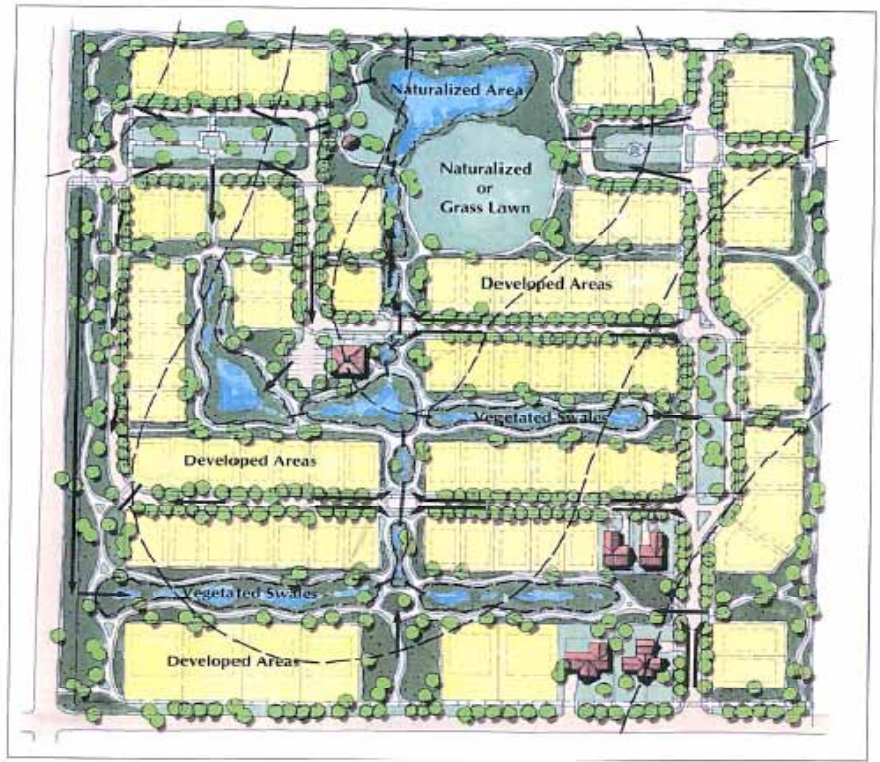


# Design Template: Moderate Density

~ CONVENTIONAL ~  
Moderate Density Residential Template



~ CONSERVATION ~  
Moderate Density Residential Template

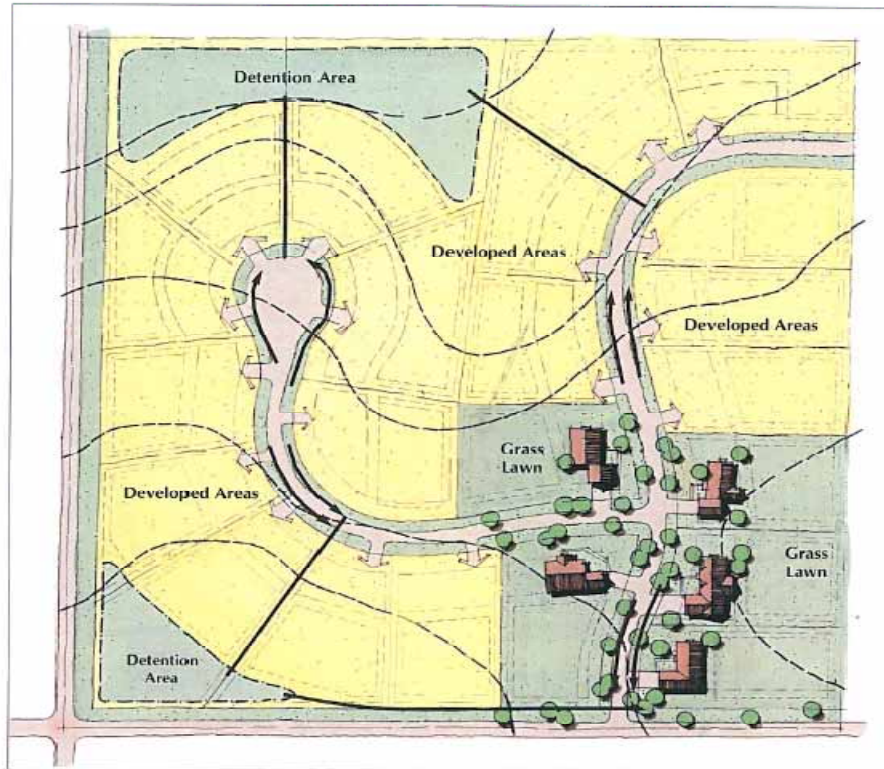






# Design Template: Rural Residential

~ CONVENTIONAL ~  
Rural Residential Template



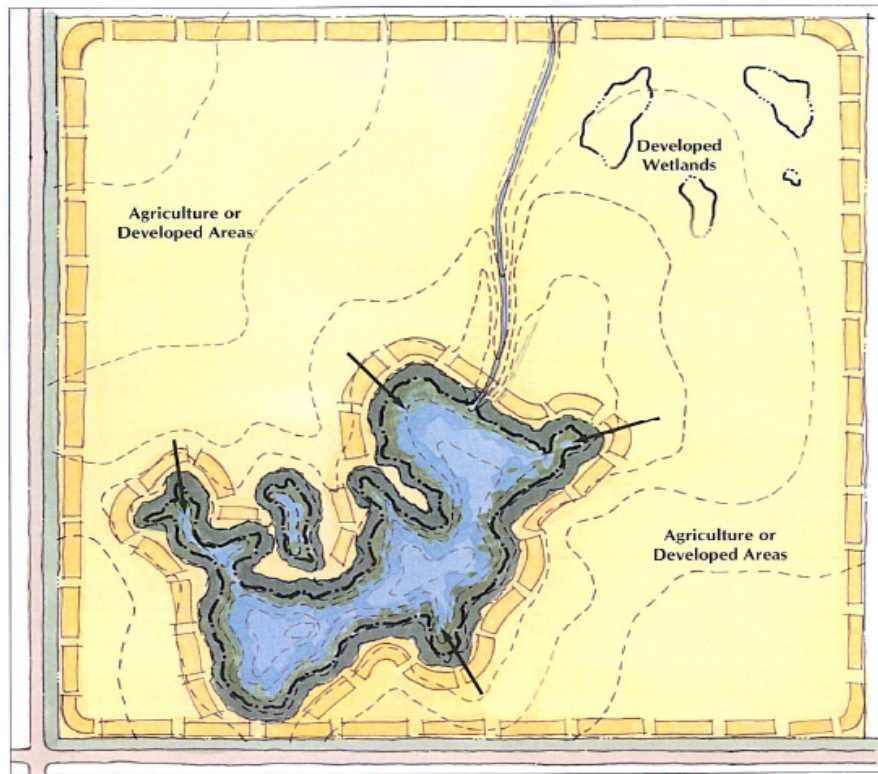
~ CONSERVATION ~  
Rural Residential Template



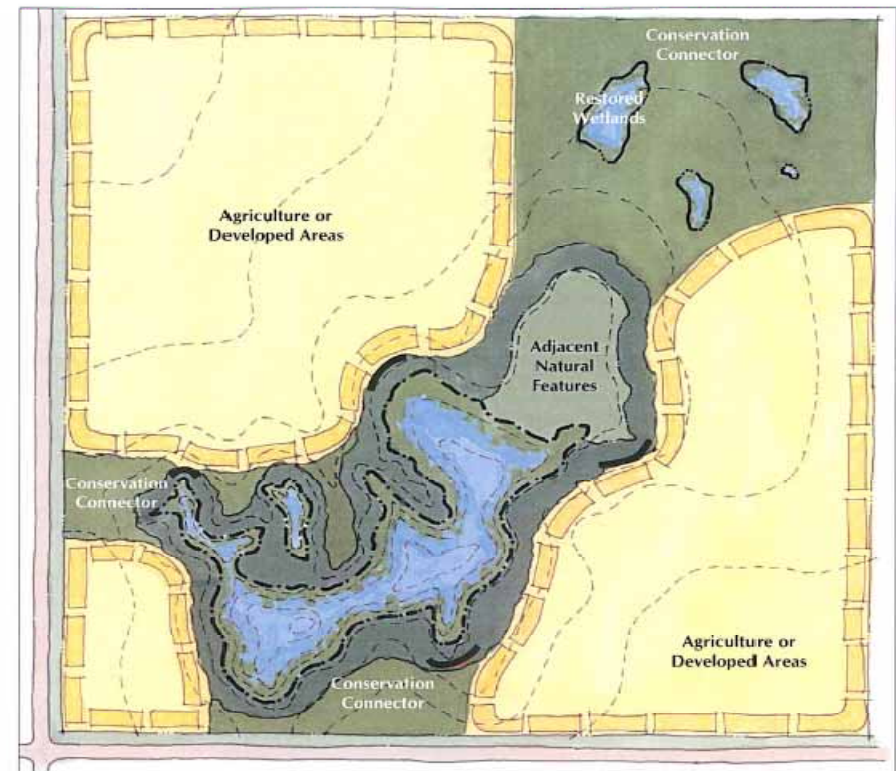


# Design Template: Wetland Enhancement

~ CONVENTIONAL ~  
Depressional Wetland Template



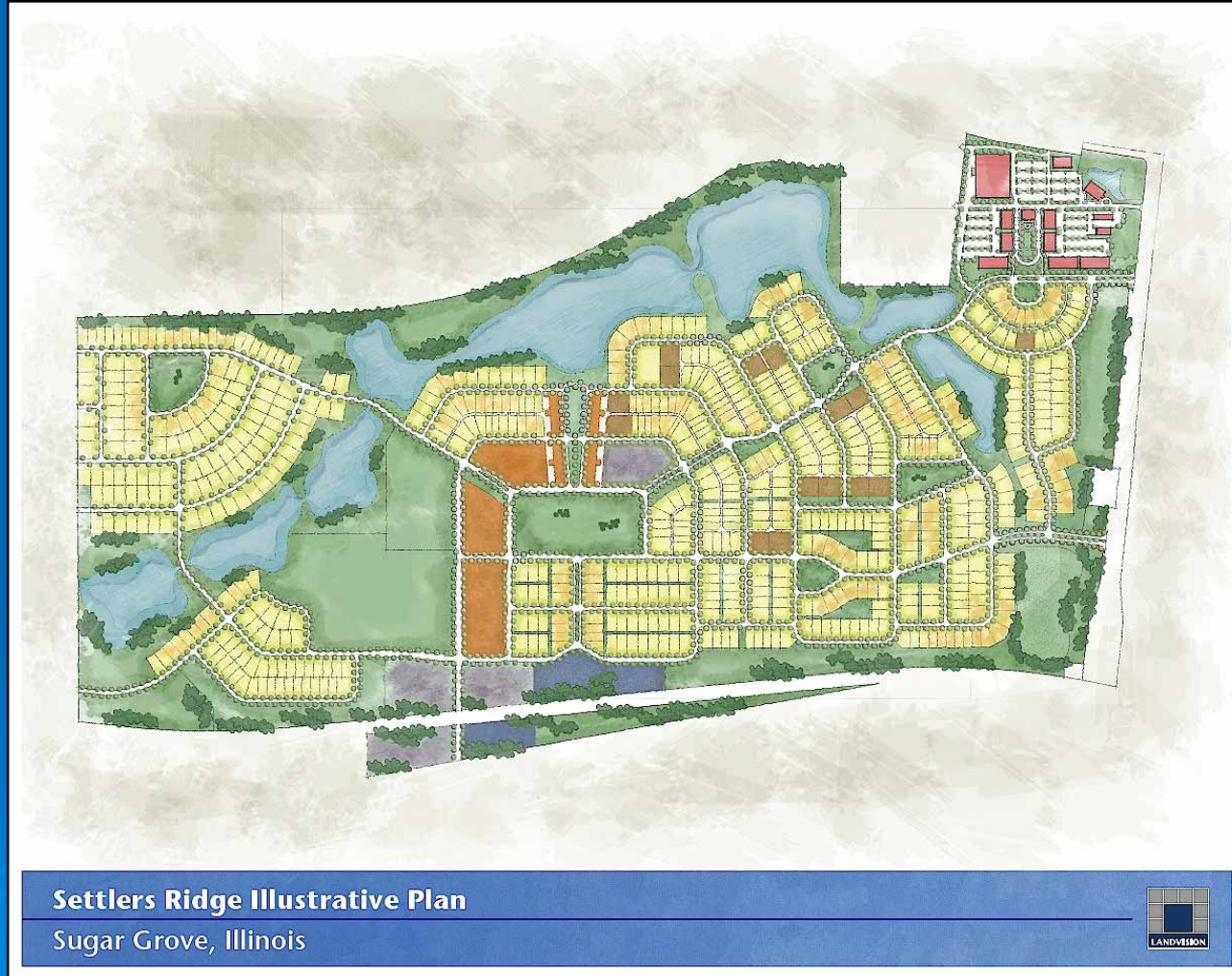
~ CONSERVATION ~  
Depressional Wetland Template





# Settlers Ridge – Sugar Grove

- Kimball Hill Homes
- 533 acres parcel in the Blackberry Creek watershed
- Features traditional neighborhood design and conservation design



**Settlers Ridge Illustrative Plan**

Sugar Grove, Illinois



# Multi-disciplinary Site Planning Approach

- Inspired by Randall Arendt
- Designed by
  - Land Vision, Inc.
  - Cowhey Gudmundson Leder
  - Hitchcock Design Group
  - Pizzo & Associates





# Conservation Design Themes

- 40% open space
- Traditional neighborhood designs (TND)
  - Clustering of neighborhoods
  - Reduced house setbacks & lot widths
- Native landscaping
- Vegetated swales and bioswales (*constrained by neighborhood densities*)
- Naturalized detention
- Wetland enhancement (17 acres)



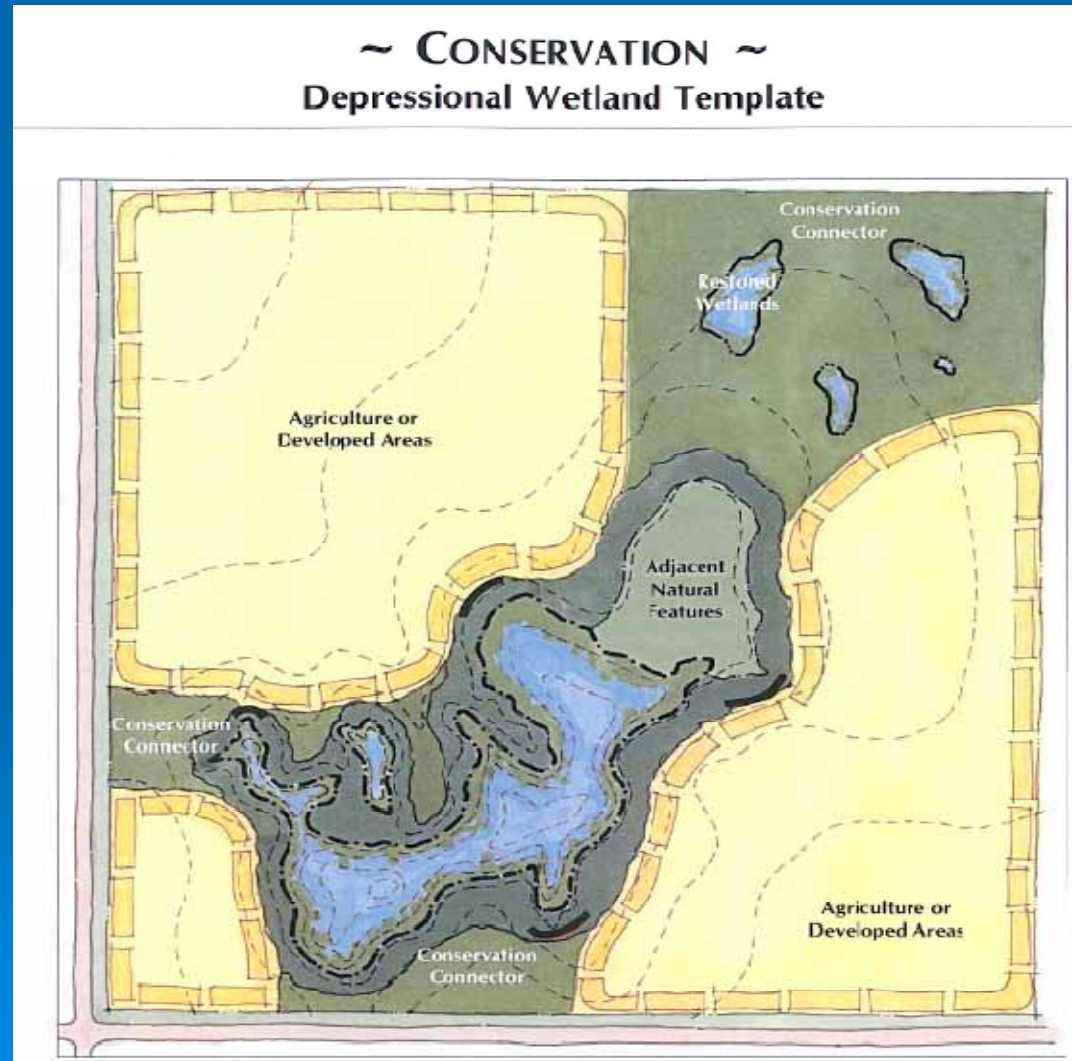


# Open Space Theme

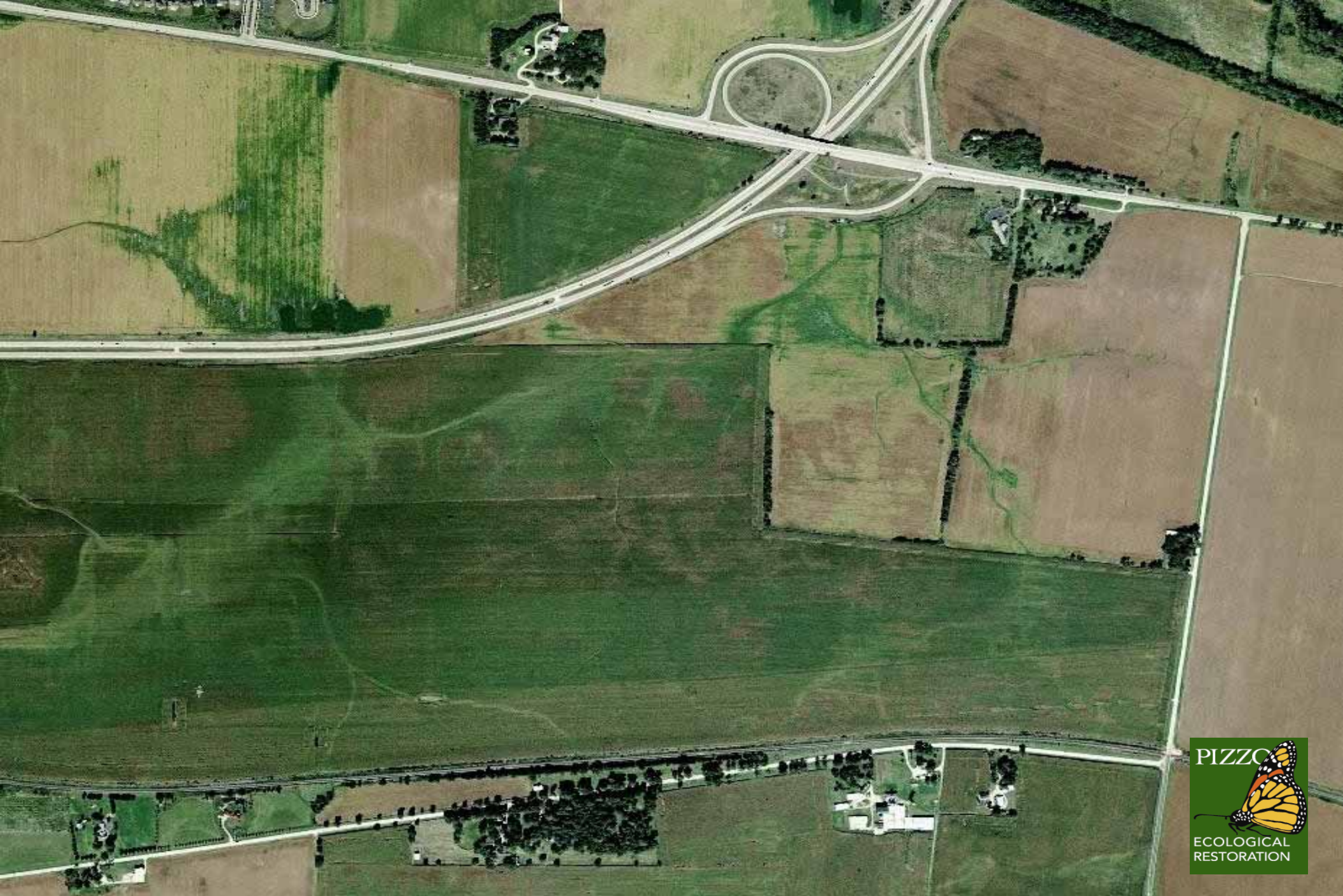




# Open Space Inspired by Blackberry Creek Design Template

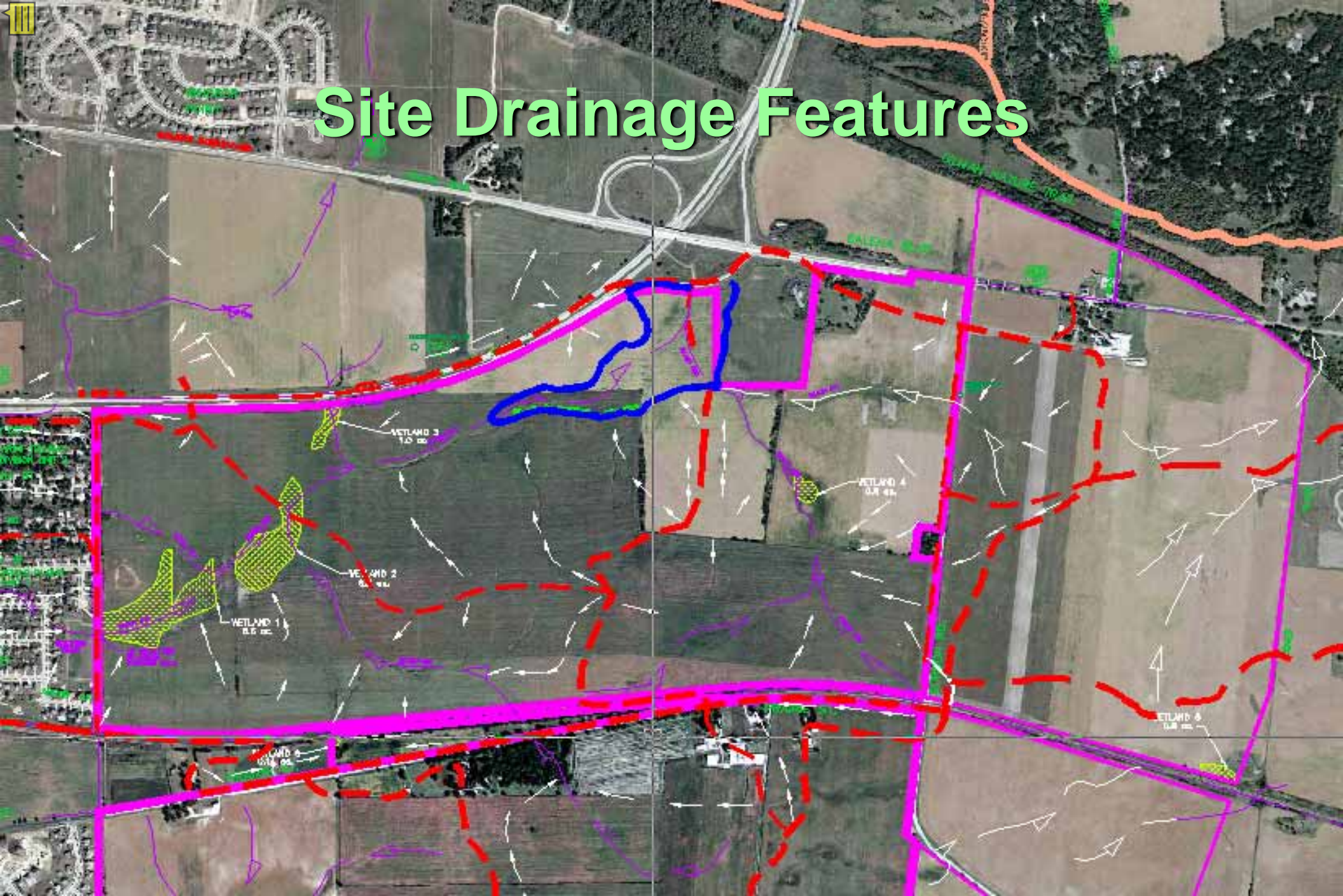








# Site Drainage Features











Settler's Ridge Spring 2006





Settler's Ridge July 5, 2007





# A Little More about Drainage BMPs...









# People and Nature in Harmony





# Ingham Park - Aurora

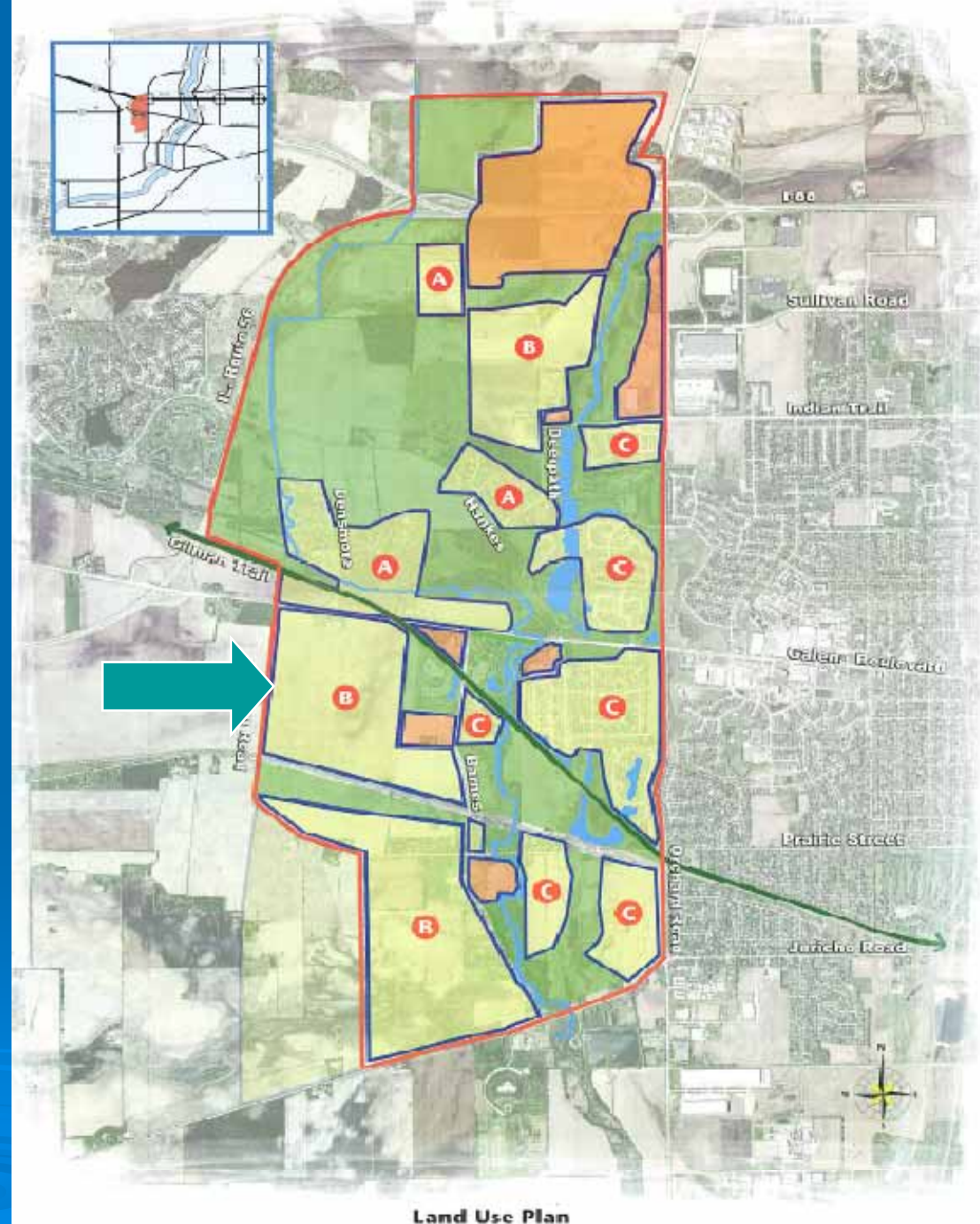
- Same developer, adjacent parcel
- Different municipality
- Different conservation design approach





# Aurora Countryside Vision Plan

- *“By looking at the land first and using creativity in development we hope to achieve an innovative living environment in harmony with nature.”*







# Countryside Vision Plan: Guiding Principles

- Protect against flooding
- Create a quality living environment
- Enhance water quality
- Provide adequate greenways along stream channels
- Look at the land first: incorporate natural areas, scenic view sheds, topography, and scenic road corridors
- Minimize site development costs to maximize open space

Neighborhood Detail



Lot Landscaping & Drainage Features



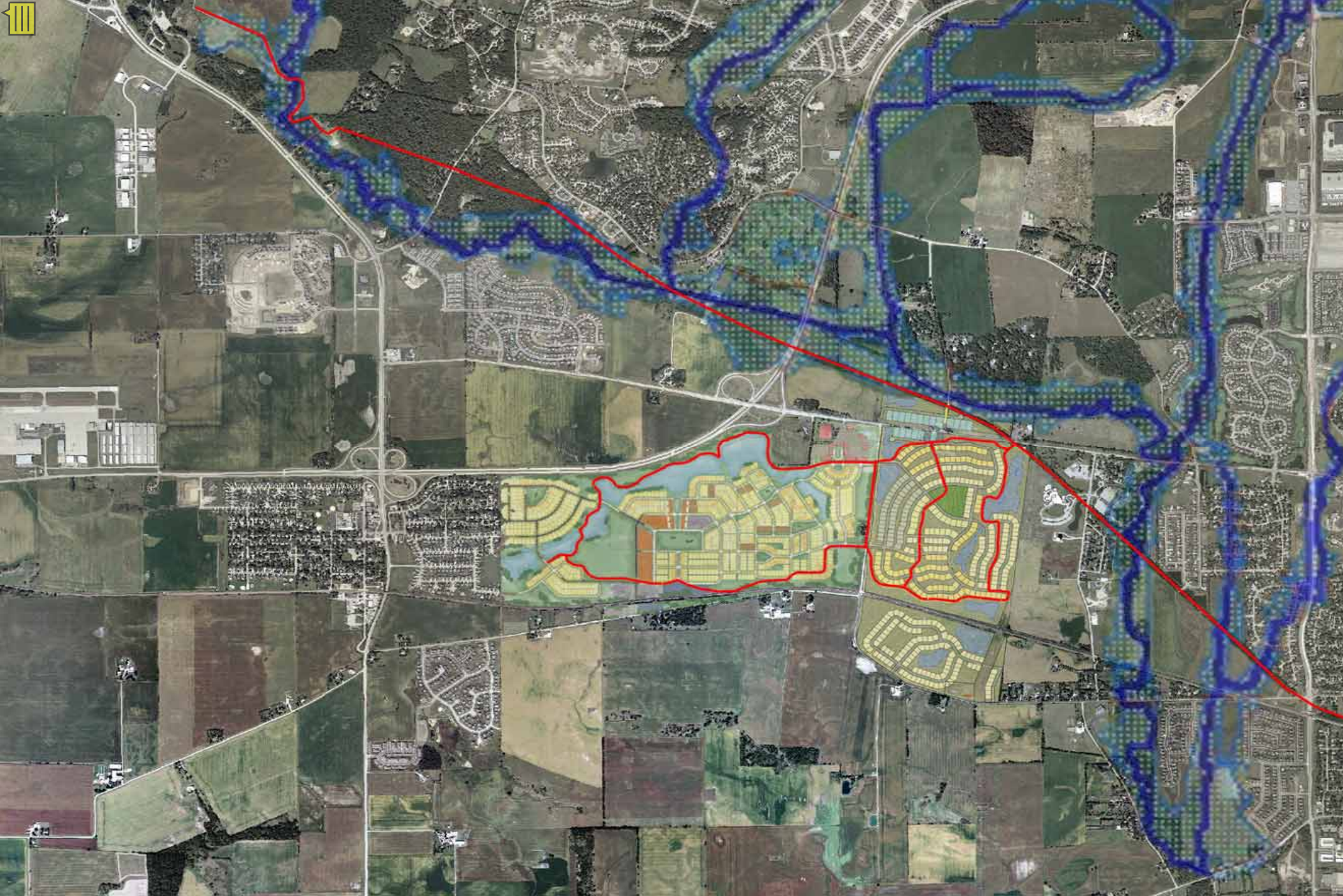
# Conservation Design Features Ingham Park

- Avoided onsite wetlands
- Open space theme
  - 49% open space
  - Natural landscaping throughout
  - Integrated trail system with regional connections
- Runoff reduction hierarchy
  - Maintained primary drainage patterns
  - Backyard swales throughout
  - Minimal storm sewer
  - Used rural road cross-sections with swale
  - Naturalized detention













## Resources:

### Chicago Metropolitan Agency for Planning (CMAP)

*"Conservation Design Resource Manual"*, 2003.  
The Ecological Planning and Design Directory

<http://www.nipco.org/environment/sustainable/>.

### Chicago Wilderness

*"Conservation Development in Practice,"* 2004

**Low Impact Development (LID) Center,**  
[www.lowimpactdevelopment.org](http://www.lowimpactdevelopment.org).

**Leadership in Energy and Environmental Design (LEED)**

[www.usgbc.org/DisplayPage.aspx?CategoryID=19](http://www.usgbc.org/DisplayPage.aspx?CategoryID=19)

### Sustainable Sites Initiative

<http://www.sustainablesites.org/>