A scenic view of a creek flowing through a forest. The water is clear and reflects the surrounding greenery. The trees are mostly deciduous, with some showing yellow and orange autumn foliage. The banks are covered in lush green grass and some fallen branches. The overall atmosphere is peaceful and natural.

Little Rock Creek Watershed Background & Existing Conditions, Part 1

Cecily Cunz, AICP, Environmental Planner

Key Discussion Topics

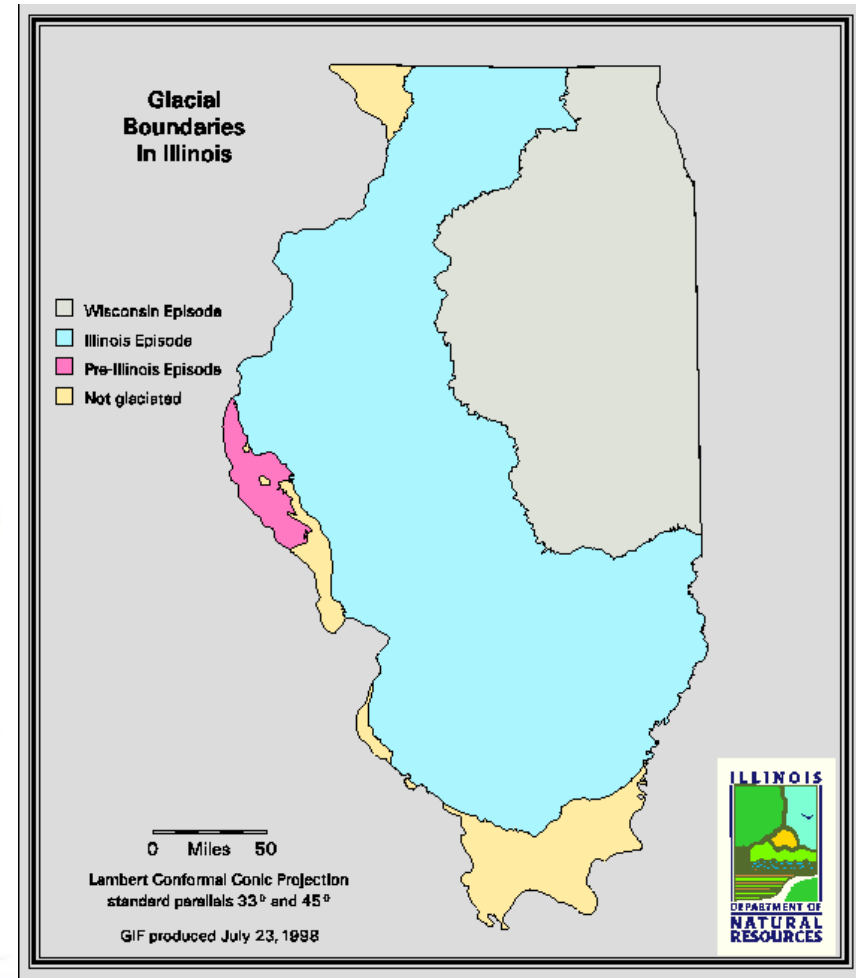
- Geology
- Pre-Settlement Conditions
- Topography
- Subwatersheds
- Pre-settlement Wetlands
- Jurisdictions & Demographics
- Code & Ordinance Review

Source: Google



Geology & Soils

- Most recent “Wisconsin” glacier receded 14,000 years ago.
- Little Rock Creek watershed is located within the Sandwich Fault Zone
- Glacial drift, loess, and alluvium over dolomite, limestone, sandstone, and shale are remnants of glacial movement



Early History

Described in *History of Dekalb County, Illinois* (1868) as:

“In the broad, billowy prairies, extending as far as the eye can reach, we have the element of vastness as in scarce any other land; we have a luxuriant sward of emerald greenness, clothing the whole land, down to the very margin of the waters; we have meandering streams, clear as crystal, now smooth, quiet and glassy, then ruffled by winds or rapids; we have clumps of trees, charming groves, disposed with an effect of beauty that might baffle a landscape gardener; now crowning the grassy height, now clothing the green slope with their pleasing shade. From the gentle heights of the rolling prairies, the country, even before the hand of man had broken its surface, wore the aspect of cultivated meadows and rich pasture grounds, irrigated by frequent rivulets.”

(Boies, 1868)

Source: [http://www.dca.illinois.gov](#)

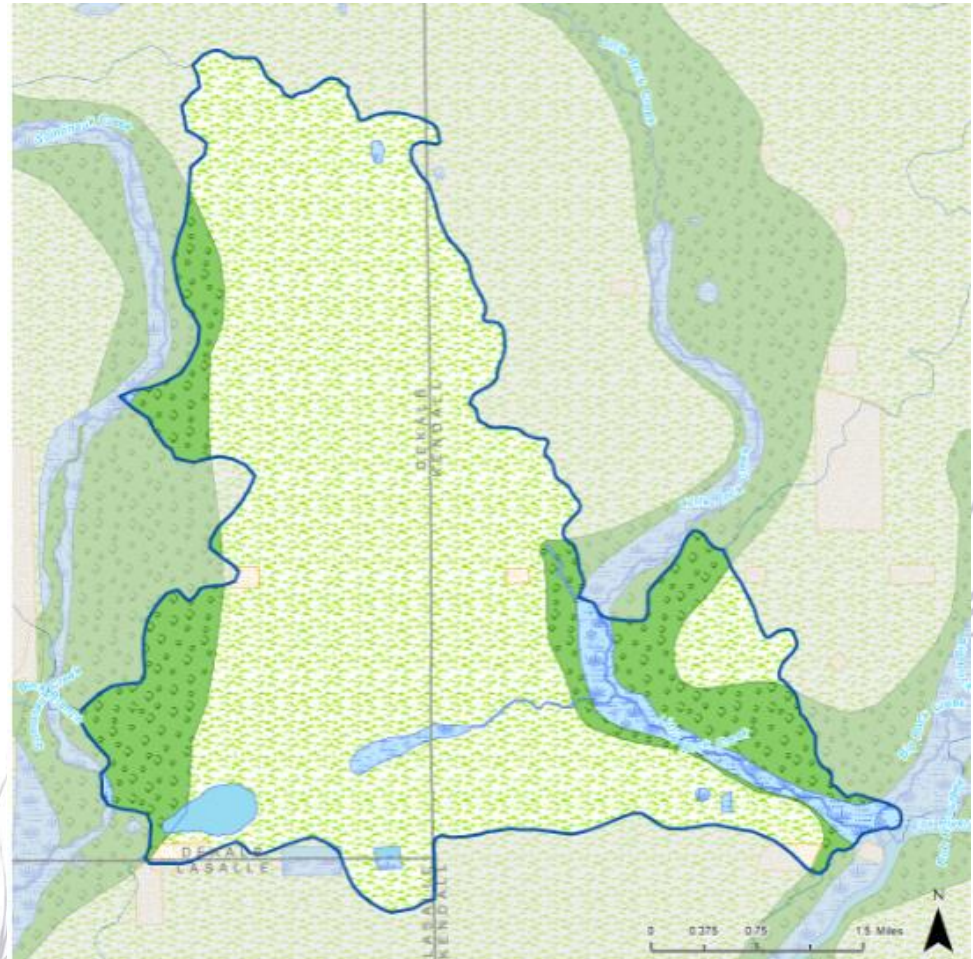


Pre-Settlement Landscape

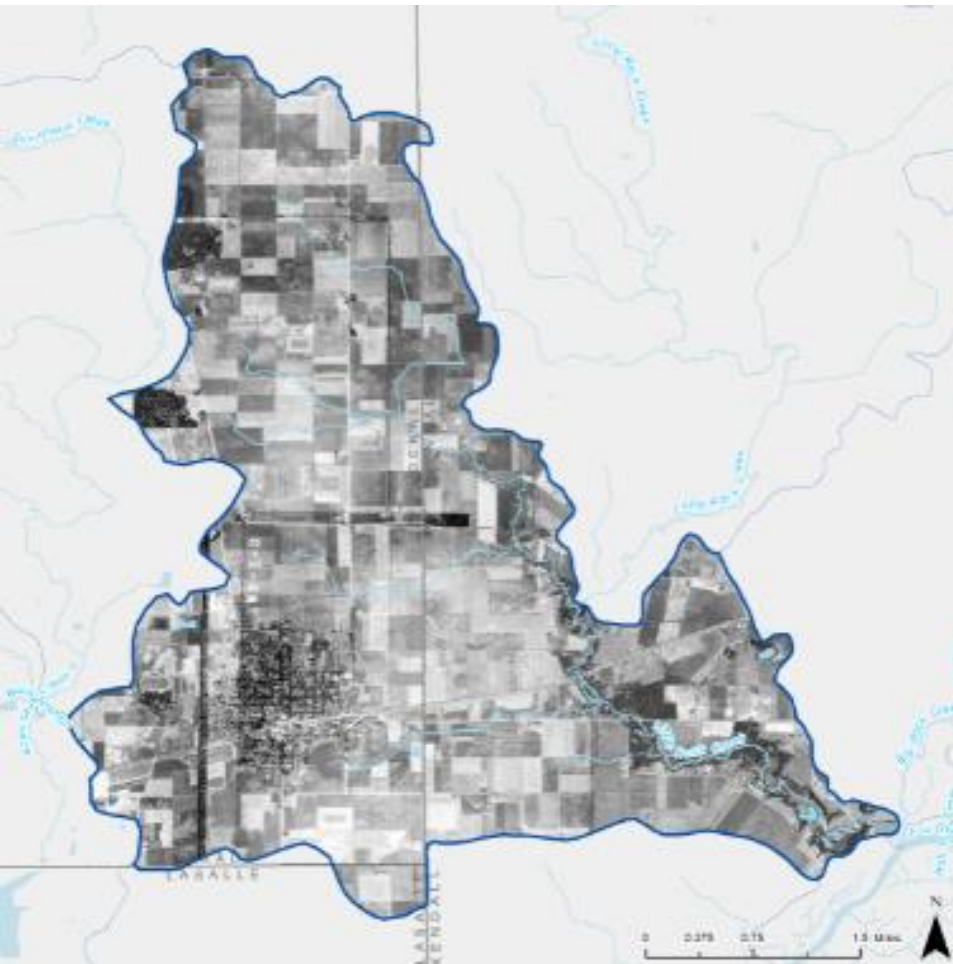
Over 75% of the watershed was prairie, with less than 20% forest, and the remainder split between wetlands, water, and agricultural fields.

LEGEND

-  Little Rock Creek Watershed
-  Streams & Tributaries (NHD)
- Landcover Early 1800s**
-  Cultural (fields)
-  Forest
-  Prairie
-  Swamp/wetland; bottomland
-  Water

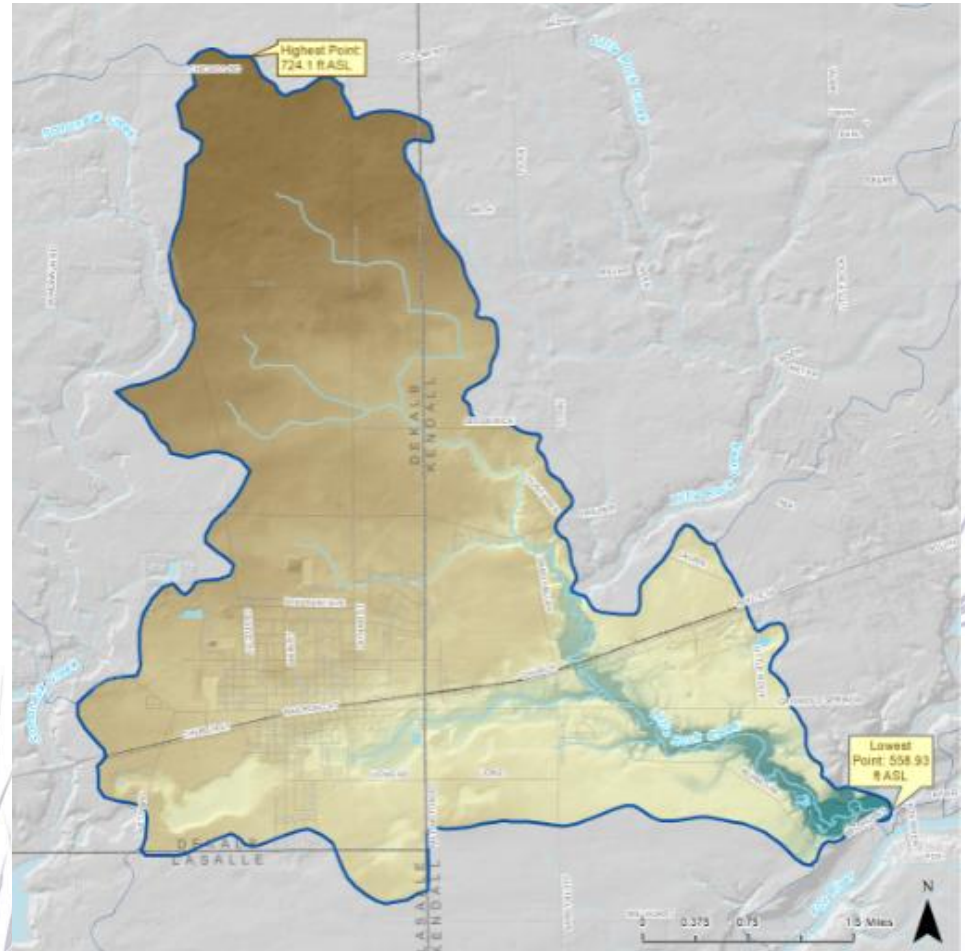


Historic (1939) & Current (2017) Aerial



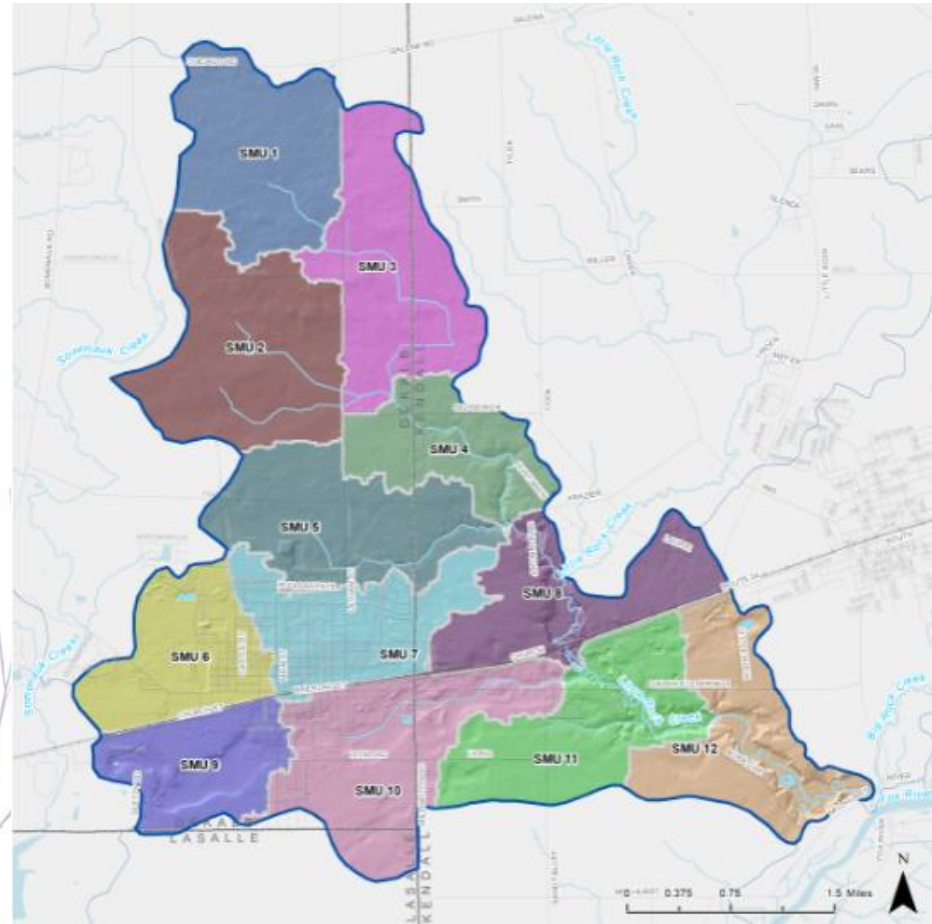
Digital Elevation Model

- Highest elevation is 724 ft ASL (north end)
- Lowest is 559 ft ASL (outlet at south)
- Flows northwest to southeast
- Difference of 165 ft
- Depicts steep valleys in the southern portion of watershed along Little Rock Creek



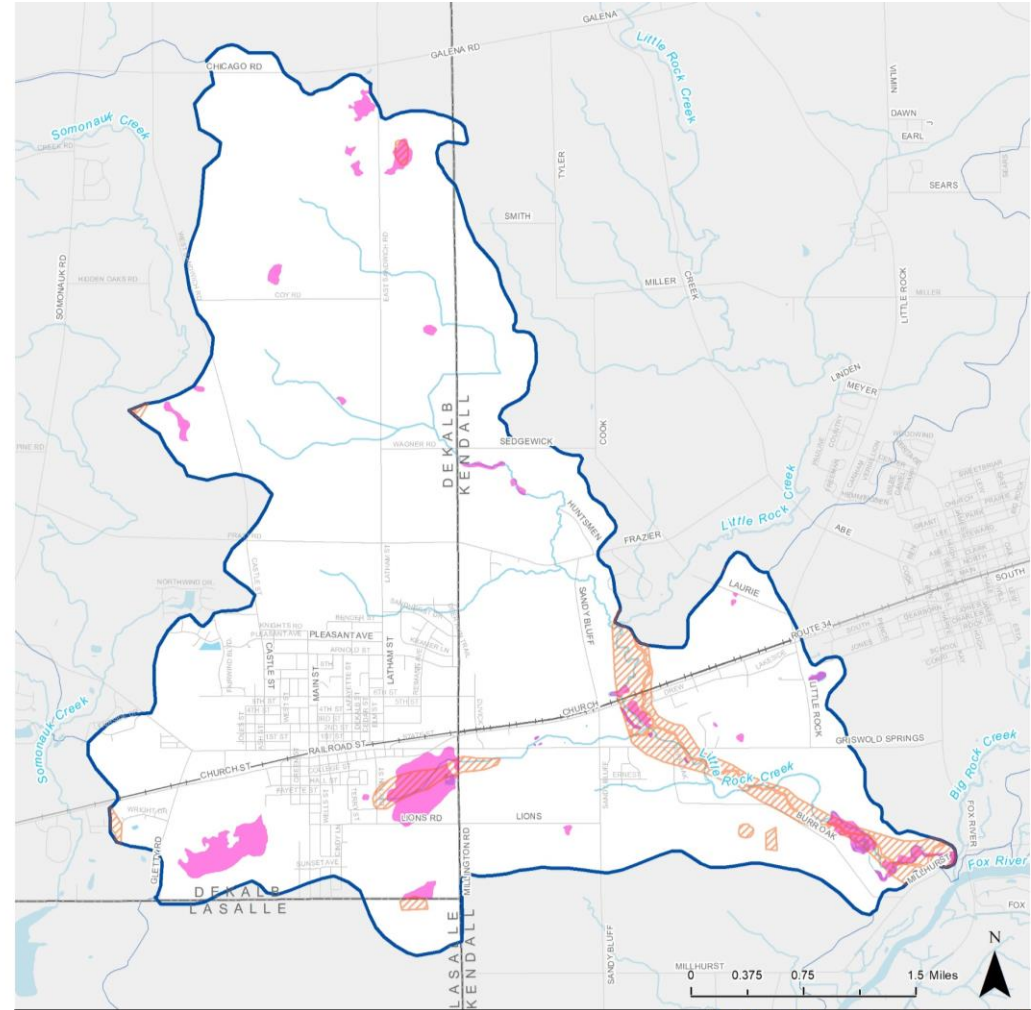
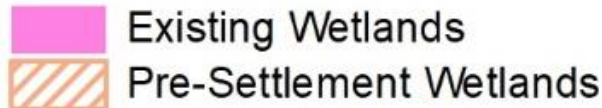
Subwatershed Management Units (SMU)

- Subwatersheds allow for a detailed look at watershed characteristics and problem areas
- Delineated 12 SMUs
- Range in size from 606.8 to 1,188.3 acres



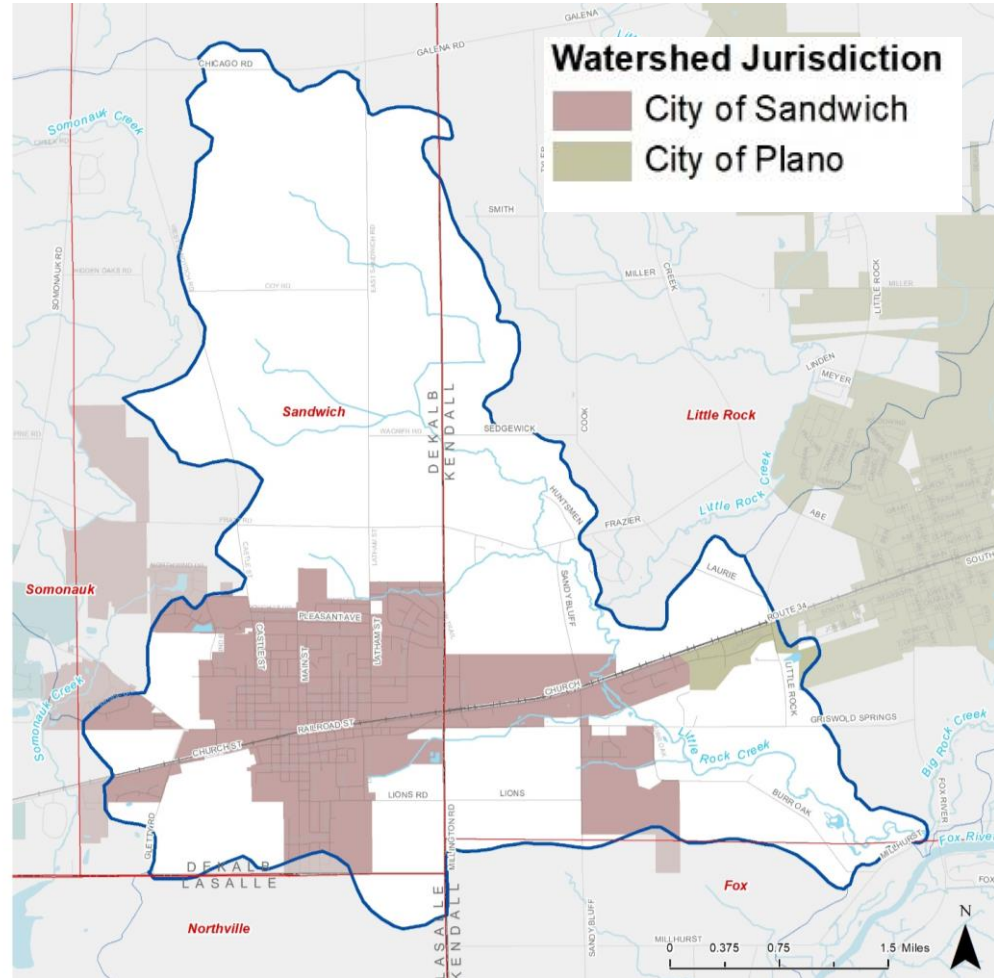
Pre-Settlement Wetlands

Historically there were approximately 1,776 acres of wetlands. According to current wetland inventories only 309 acres remain, representing a loss of 83%.



Jurisdictions

Jurisdiction	Area (Acres)	% of Watershed
County		
DeKalb County	6,353.7	60.3%
Kendall County	4,058.6	38.5%
LaSalle County	128.8	1.2%
Total	10,541.1	100.0%
Unincorporated Township Areas		
Unincorporated Fox Township	126.8	1.2%
Unincorporated Little Rock Township	3,132.4	29.7%
Unincorporated Northville Township	125.4	1.2%
Unincorporated Sandwich Township	4,647.1	44.1%
Total	8,031.7	76.2%
Municipalities		
City of Sandwich	2,392.5	22.7%
City of Plano	116.9	1.1%
Total	2,509.4	23.8%



Levels of Jurisdictions

Level of Jurisdiction	Entities
Federal	US Environmental Protection Agency (USEPA)
	- Office of Water
	US Army Corps of Engineers (USACE)
	US Department of Agriculture (USDA)
	- Natural Resources Conservation Service (NRCS)
	- Farm Service Agency (FSA)
	- Agricultural Research Service (ARS)
	- Forest Service (FS)
	- National Institute of Food and Agriculture (NIFA)
	- Rural Utilities Service (RUS)
	US Fish and Wildlife Service (USFWS)
	US Department of Transportation (USDOT)
	- Federal Aviation Administration (FAA)
	State
- Bureau of Land	
- Bureau of Water	
Illinois Department of Natural Resources (IDNR)	
- Office of Water Resources (OWR)	
- Illinois Nature Preserves Commission (INPC)	
Illinois Department of Agriculture (IDOA)	
Illinois Department of Transportation (IDOT)	

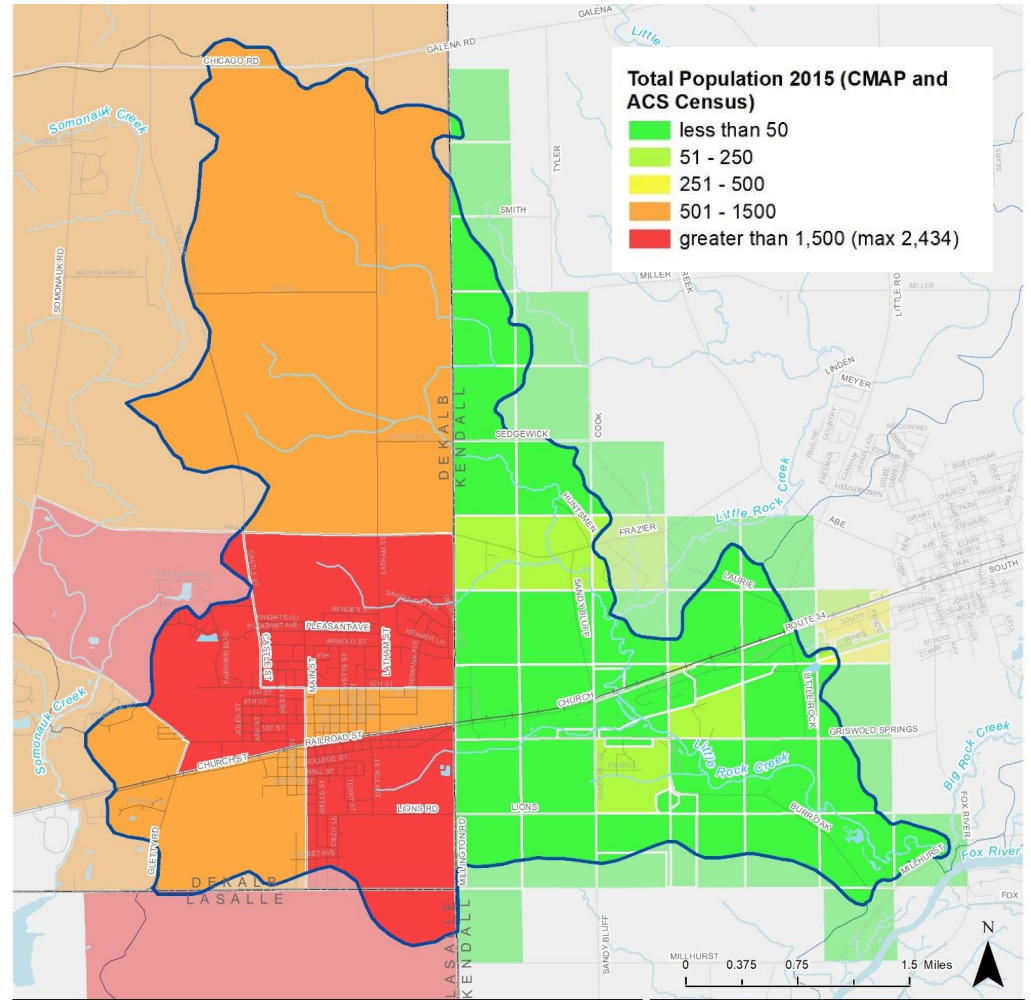
Level of Jurisdiction	Entities
County	DeKalb County Board
	DeKalb County Community Development Department
	DeKalb County Health Department
	DeKalb County Highway Department
	DeKalb County Soil and Water Conservation District
	DeKalb County Forest Preserve
	Kendall County Board
	Kendall County Planning, Building, and Zoning Department
	Kendall County Highway Department
	Kendall County Forest Preserve District
	LaSalle County Board
	LaSalle County Environmental Services and Land Use Department
	LaSalle County Highway Department
	LaSalle County Parks Department
Local	City of Sandwich
	City of Plano
	Unincorporated Fox Township
	Unincorporated Little Rock Township
	Unincorporated Northville Township
	Unincorporated Sandwich Township
Special	Drainage Districts
	DeKalb County Regional Office of Education
	Regional Office of Education #35
	Kendall County Regional Office of Education



Demographics - Population

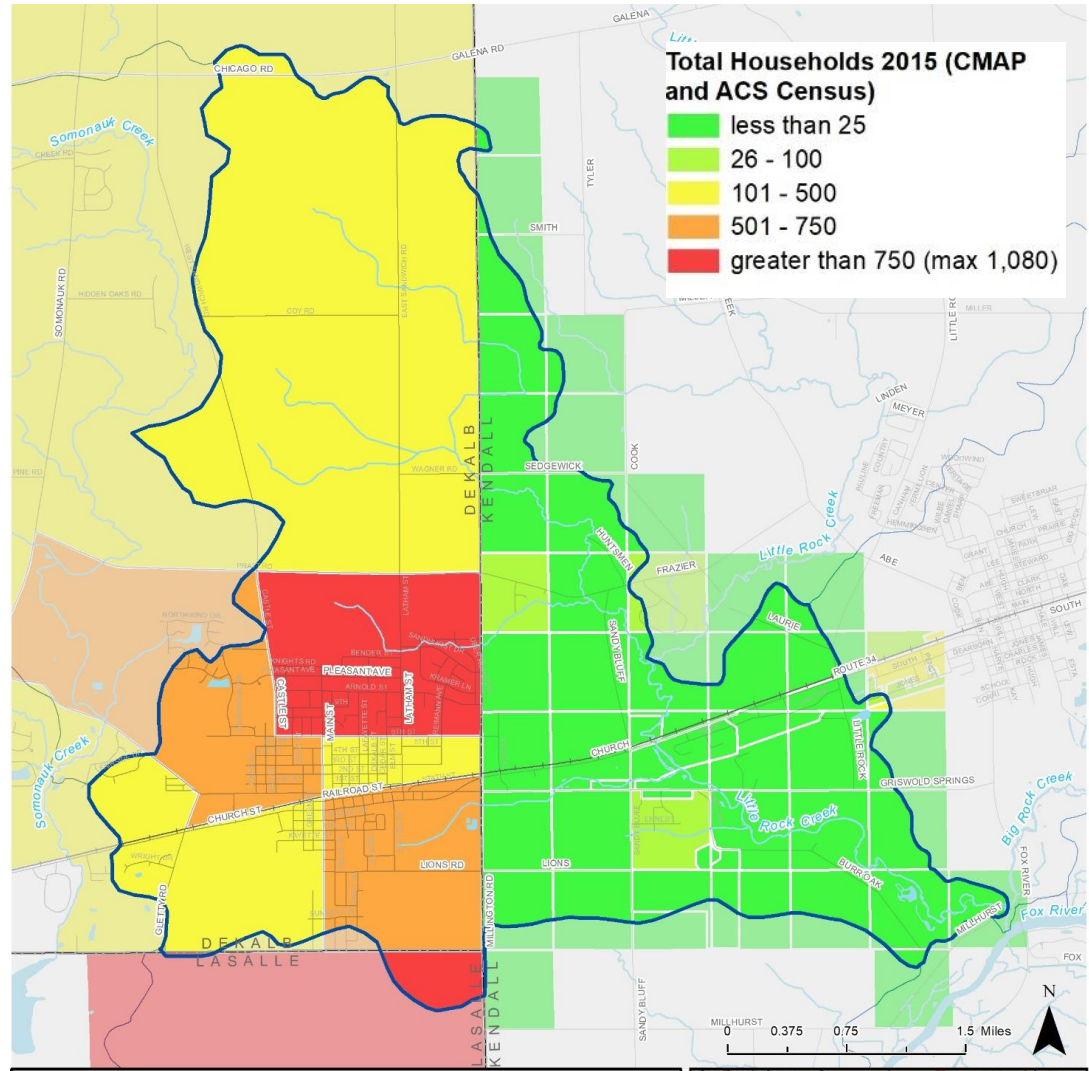
Demographics data based on CMAP data and the American Community Survey 2015 data for DeKalb and Lasalle Counties

Total population in 2015 is 13,222 (slight over estimation)



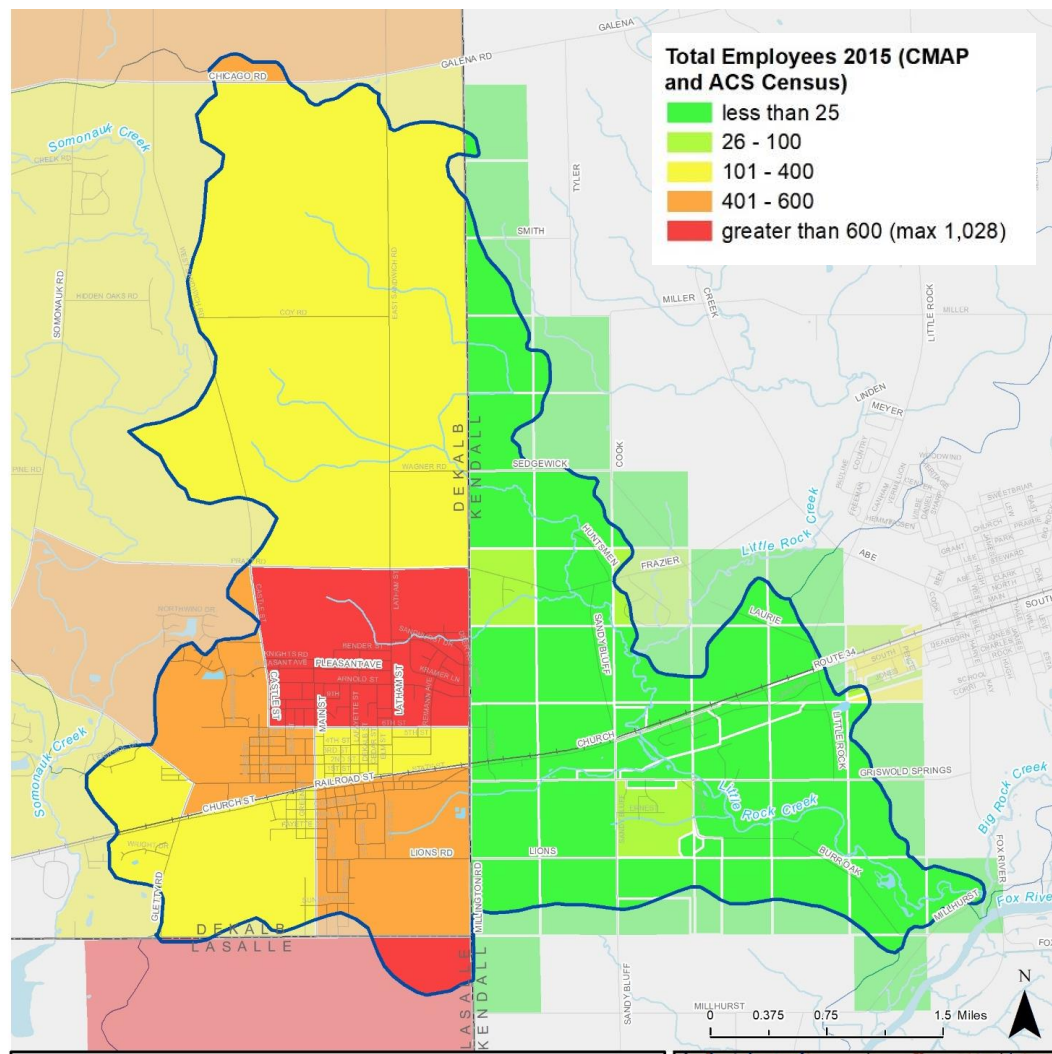
Demographics - Households

4,867 total households in 2015 (slight over estimation)



Demographics – Employed Population

Employed population of 7,143 in 2015 (slight over estimation)



Transportation Network

Roads

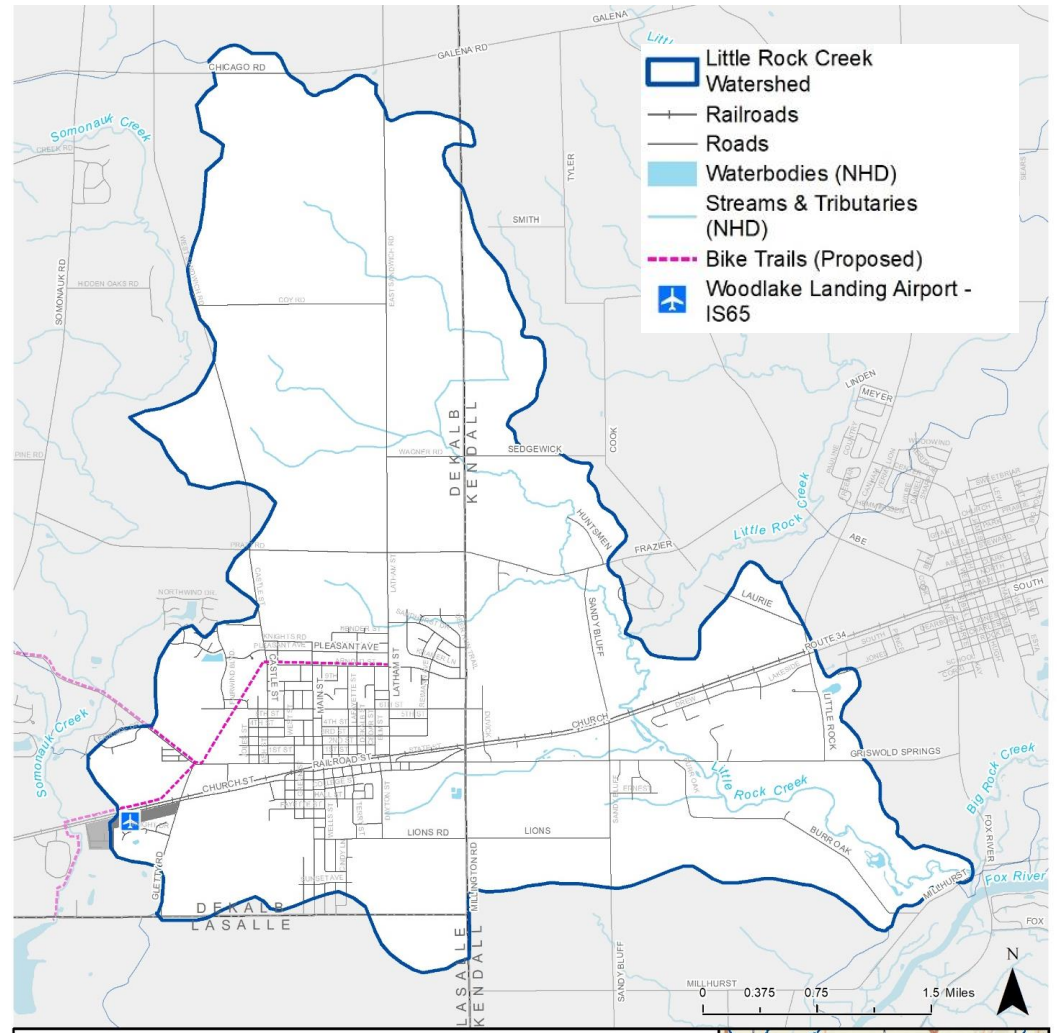
- 69 miles of roads

Railroads

- Runs east-west
- Primarily used to transport freight

Walking/Bike Trails

- Not an extensive trail network
- 2.6 miles of proposed trails



Ordinance Review

Plan includes narrative on the environmental protections at the federal and state level, such as:

- Clean Water Act (federal)
- NPDES permitting (state)

Must assess county and municipal ordinances:

- Stormwater regulation (county)
- Compare ordinances against a standard
- Strengths
- Weaknesses



Municipal Ordinances

Municipal regulation has the ability to be the most protective

Can include:

- Environmental regulations
- Zoning ordinance
- Subdivision codes
- Stormwater management or drainage criteria
- Buffer or floodplain regulations
- Tree protection or landscaping ordinances



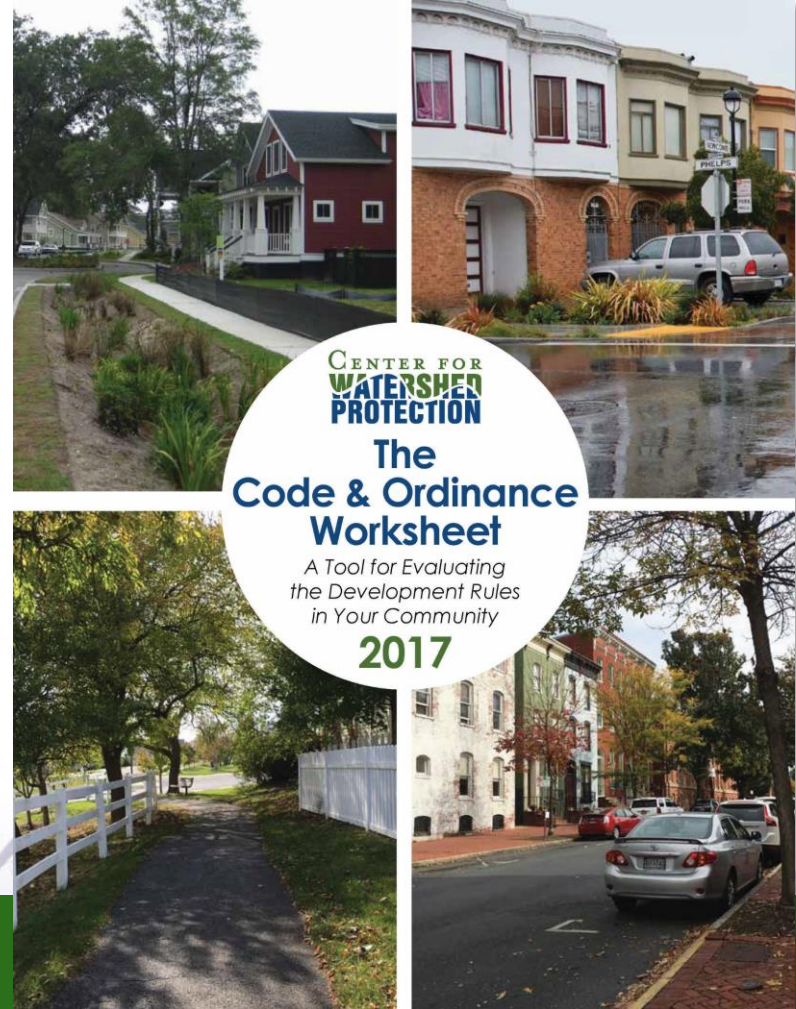
Center for Watershed Protection

The Code & Ordinance Worksheet: A Tool for Evaluating Development Rules in Your Community (CWP, 2017)

Step 1: Find out what the development rules are in your community

Step 2: See how your rules stack up to the model development principles

Step 3: Consider changing some local development rules



Center for Watershed Protection

Four categories:

- Residential Streets & Parking Lots
- Lot Development
- Conservation of Natural Areas
- Runoff Reduction

Suburban and Rural
Form are best fit



Residential Streets & Parking Lots

- Street Width
- Street Length
- Right-of-Way Width
- Cul-de-Sacs
- Vegetated Open Channels
- Parking Ratios
- Parking Codes
- Parking Lots
- Structured Parking
- Parking Lot Runoff

	Question	Yes	No	M
Code Area				
Street Width				
1	Is the minimum roadway width allowed for streets in neighborhoods with low volume roads (less than 400 average daily trips according to AASHTO, 2001) between 18-22 feet (where bicycle lanes are not present)?			
2	Are curb extensions that narrow the roadway (such as pinchpoints, gateways, and chicanes) permissible?			
3	Are permeable paving materials allowable on low-use streets and/or parking lanes?			
Street Length				
4	Does the subdivision, Planned Unit Development, or Unified Development ordinance identify reducing street length as a goal of neighborhood street design?			
Right-of-Way Width				
5	Is the recommended right-of-way width for a low-volume residential street less than 45 feet?			
6	Does the code allow utilities to be placed under the paved section of the right-of-way to limit clearing and allow compact development footprint?			
7	If street trees are required, is the planting area required to be at least 6 feet to provide sufficient rooting space to support large			
Cul-de-Sacs				
8	Do the street or subdivision standards allow street layouts that minimize the use of cul-de-sacs?			
9	Is the minimum radius for cul-de-sacs 48 feet or less?			
10	Can a landscaped island be created within the cul-de-sac?			
	<i>Yes, and the cul-de-sac must be graded to the island with an overflow to the storm drain system, so that it can be used for stormwater treatment (2 pts.)</i>			



Lot Development

- Open Space Design
- Setbacks and Frontages
- Sidewalks
- Driveways
- Open Space Management
- Rooftop Runoff

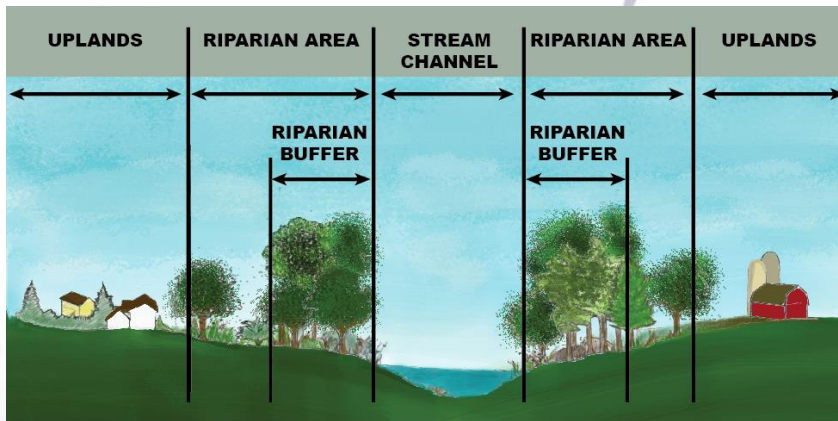


Open Space Design			
31	Do the ordinances require or allow open space subdivisions? <i>Yes, they are required in a designated open space zoning district (2 pts.)</i>		
	<i>Yes, open space designs are an allowable option (through an overlay zone) (1 pt.)</i>		
32	Is land conservation or impervious cover reduction a major stated goal or objective of the open space design ordinance?		
33	Is a minimum percentage of the buildable portion of the site required to be set aside as open space? <i>Yes, at least 50% (2 pts.)</i> <i>Yes, less than 50% (1 pt.)</i>		
34	Is the open space determined through a stepwise design process where open space is identified first?		
35	Is open space design a by-right form of development versus a more burdensome conditional use or warrant?		
36	Are flexible site design criteria available for developers that utilize open space or cluster design options (e.g., setbacks/lot lines, road widths, lot sizes and shapes)?		
37	Are density bonuses and/or penalties used to encourage use of open space design? <i>Yes, density penalties are given for conventional development. (2 pts.)</i> <i>Yes, density bonuses are provided for open space designs that exceed the minimum requirements for open space protection, up to an established maximum. (2 pts.)</i> <i>Yes, density bonuses are provided for open space designs that exceed the minimum requirements for open space protection, with no cap on density bonuses. (1 pt.)</i>		
Setbacks and Frontages			
38	Are irregular lot shapes (e.g., pie-shaped, flag lots, zipper lots) allowed in the community?		
39	Does the code allow for variances to setback and frontage requirements?		
Sidewalks			
40	Can minimum sidewalk widths for residential neighborhoods be reduced to 5 feet where safe and appropriate? (2 pts.)		
41	Can alternate pedestrian networks (e.g., paved trails through common areas, walkways and bike trails connecting cul-de-sacs to other streets) be substituted for sidewalks in the right-of-way?		



Conservation of Natural Areas

- Buffer Systems
- Buffer Maintenance
- Clearing and Grading
- Tree Conservation
- Land Conservation
- Incentives
- Stormwater Outfalls



Buffer Systems			
61	Do the development standards in the community require a vegetated buffer along waterways?		
62	Is the definition of waterway, or the regulated buffer, expansive enough to include (check all that apply):		
	<i>Perennial streams (0.5 pts.)</i>		
	<i>Ephemeral and intermittent streams (0.5 pts.)</i>		
	<i>Lakes (0.5 pts.)</i>		
	<i>Estuaries and shorelines (0.5 pts.)</i>		
	<i>Wetlands (0.5 pts.)</i>		
	<i>Vernal Ponds (0.5 pts.)</i>		
63	Is the minimum buffer width 50 feet or more?		
	<i>Yes, width is 100 feet or greater (2 pts.)</i>		
	<i>Yes, width is between 50-99 feet (1 pt.)</i>		
	<i>No, width is < 50 feet</i>		
64	Are buffer widths greater for sensitive resources (e.g., designated high quality streams) or in certain zones (e.g.,		
65	Is expansion of the buffer to include adjacent wetlands, steep slopes, or the 100-year floodplain required?		
Buffer Management			
66	Does the buffer ordinance specify that a minimum percentage of the buffer be maintained with native vegetation? (2 pts.)		
67	Does the buffer ordinance outline prohibited uses and permitted uses that have little impact to the vegetated buffer?		
68	Does the ordinance specify enforcement mechanisms?		
69	Does the buffer ordinance specify a preference for buffers to be located on a parcel of common ownership (e.g., a homeowners' association)?		
Clearing and Grading			
70	Is there any ordinance that requires the preservation of native soils, hydric soils, natural vegetation, or steep slopes at development sites? (2 pts.)		
71	Do regulations limit the total portion of the site that can be		



Runoff Reduction

- Stormwater Codes
- Installation & Maintenance of Practices
- Off-site Compliance



Stormwater Codes			
86	Do codes define rainwater harvesting and establish acceptable uses for rainwater (e.g., irrigation and toilet flushing) and corresponding treatment requirements?		
87	Does the stormwater code include specific standards to reduce post-construction runoff volume (not just peak rate)?		
	<i>Yes, runoff/volume reduction is required for most new development and redevelopment sites (2 pts.)</i>		
	<i>Yes, the standards apply to some sites or are included as an alternative compliance method (1 pt.)</i>		
88	Does the code require or have incentives for consideration of runoff reduction concepts early in the site planning process?		
	<i>Yes, there are provisions for a pre-application meeting or similar (2 pts.)</i>		
	<i>Yes, but the meetings are not mandatory for applicants (1 pt.)</i>		
89	If the code includes post-construction runoff reduction standards, is there reference to clear, understandable, and local or regionally-based design guidance or stormwater manual?		
	<i>Yes, the code references design guidance or a manual (2 pts.)</i>		
	<i>Yes, such a manual exists but it is not referenced in the code (1 pt.)</i>		
90	Are drainage and stormwater treatment standards all in one place within the code and internally consistent?		
	<i>Yes, codes are consolidated and consistent regarding applicability and methods</i>		
	<i>No, various code sections are conflicting or inconsistent</i>		
Installation and Maintenance of Practices			
91	Do erosion and sediment control standards specify protection of post-construction practice sites during active construction?		
	<i>Yes, erosion control standards include these provisions (2 pts.)</i>		
	<i>Yes, the code is not explicit but it is addressed during plan review (1 pt.)</i>		



Scoring

- Your overall score provides a general indication of your community's ability to support environmentally sensitive development.
- As a general rule, if your overall score is lower than 80%, then it may be advisable to systematically reform your local development rules.
- Final results included in watershed plan document and can be used to measure improvement over time.



Center for Watershed Protection

Necessary for someone familiar with each municipality's ordinances to complete the review.

Letter to administrators explaining worksheet and how to complete it forthcoming.

Dear Tom,

Protection of natural resources and development of green infrastructure during future urban growth will be important for the future health of Lower Little Rock Creek and the surrounding watershed. As part of the watershed planning process, an assessment of local municipal ordinances needs to be performed to determine how development is regulated within the area of the overall watershed. In this way, potential improvements to local ordinances can be identified. As part of the assessment, Sandwich will need to compare their local ordinances against the Code and Ordinance Worksheet (Excel Spreadsheet, attached) outlined by the Center for Watershed Protection (CWP) in a publication entitled "*The Code & Ordinance Worksheet- A Tool for Evaluating the Development Rules in Your Community*," (attached).

The Code and Ordinance Worksheet allows an in-depth review of the standards, ordinances, and codes that shape how development occurs in your community. The worksheet consists of a series of questions, listed under the "Suburban Form" tab of the spreadsheet, that correspond to model development principles. Points are assigned based on how well the current development rules agree with the site planning benchmarks derived from the model development principles.

CWP's recommended ordinance review process involves assessments of over 23 categories. Various questions with differing point totals are examined under each category. The maximum score is 111. CWP also provides general rules based on scores.

Instructions are listed at the top of the "Suburban Form" tab. In short, if yes, mark a "1" in the "yes" column if the ordinance exists. Mark a "2" in the "yes" column if the question is highlighted blue, and a "0.5" if the question is highlighted orange. If the answer is "No" or "N/A", mark an "X" in the corresponding cell. Use the "Notes" column to record details of the code language and reference the relevant code and section, if desired.

Based on the level of detail involved in the worksheet it is necessary for someone familiar with Sandwich codes and ordinances to complete the worksheet and generate a score. The attached spreadsheet contains questions on the "Suburban Form" tab and assigns and tracks points for various regulations as it is completed. Please complete this form and return the spreadsheet to me by May 29th, 2020.

Thank you in advance for taking the time to review how your municipality fares against this worksheet. Your assistance with this task will ensure Sandwich is accurately represented in the watershed plan. If you have any questions or concerns, please don't hesitate to contact me.

Thank you,
Cecily Cunz
Applied Ecological Services
Cecily.cunz@appliedeco.com
773.351.0514

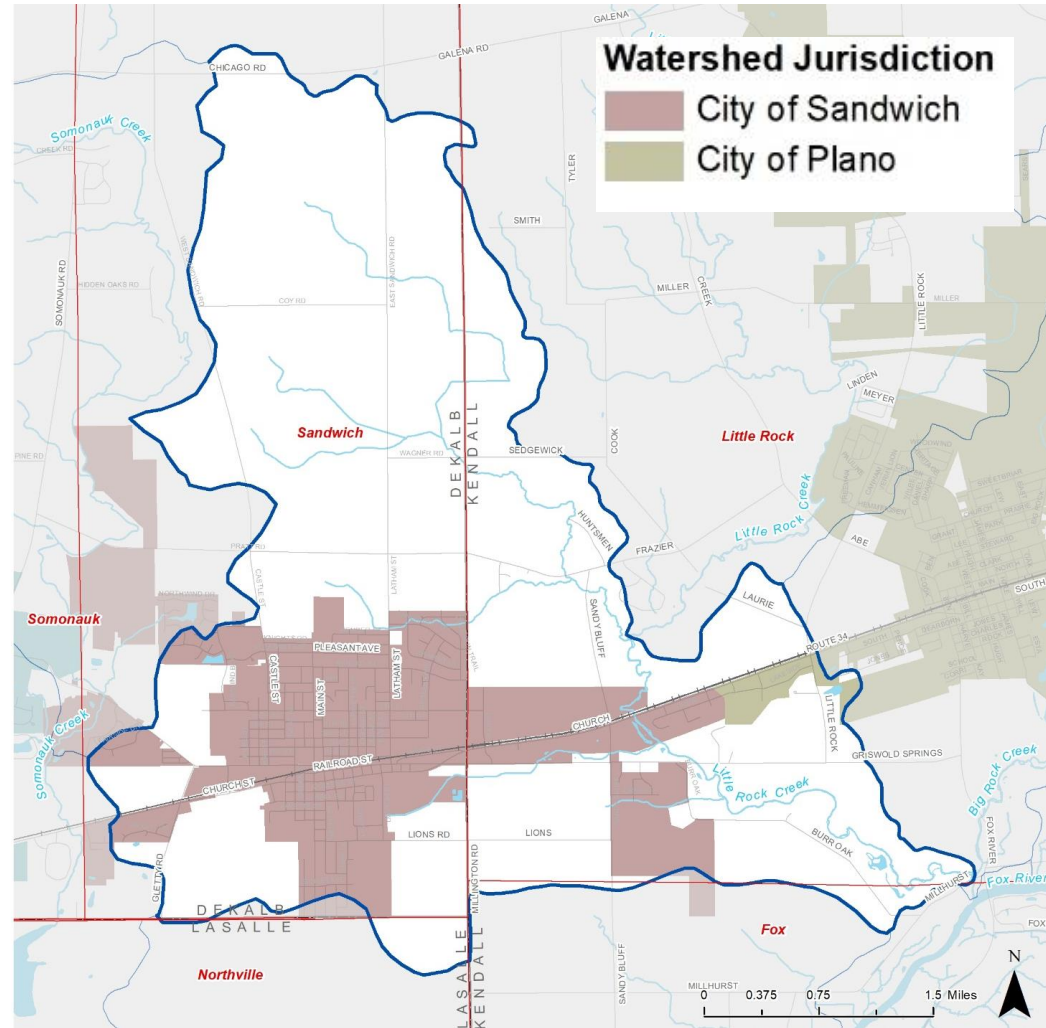


Ordinance Review

Contacts for Ordinance Review?

- Kendall County
- Sandwich
- Plano?
- LaSalle County?

Dekalb County
(completed as part of
USB Kishwaukee River
watershed plan)



Watershed Planning Schedule

May '20 – Watershed Characteristics Assessment,
Part 2

July '20 – Water Quality, Initial Modeling Results

September '20 – Watershed Goals & Prioritization

November '20 – Critical Areas and Action Plan

January '21 – Outreach Plan, Monitoring Plan, &
Milestones





Questions?



APPLIED ECOLOGICAL SERVICES, INC.