Sustainability and Urban Nature

An Introduction to Roosevelt University and Exploration of Urban Nature

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McHenry D156 Student Visit / Campus Tour
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Roosevelt University: a Snapshot

Founded 1945

Photo: AIA

- Campuses: downtown Chicago, suburban Schaumburg, online
- 6 colleges
  - Arts & Sciences
  - Business
  - Education
  - Performing Arts (Music / Theater)
  - Pharmacy
  - Professional Studies
- Level II comprehensive institution
- ~6,100 students (3,650 undergrad)
- Racially and geographically diverse
- Social justice-centered mission

Sustainability at Roosevelt

Off to a Running Start Since 2010

Sustainable Buildings & Operations

- Wabash Building
- Goodman Center
- AUD retrofits
- Schaumburg Campus Redevelopment

Academic Innovation

- Sustainability Studies undergrad program launched Fall 2010 (1st in Chicago)
- Environmental Science Minor revamped Fall 2012
- SENCER pedagogy in Biology & Chem
- Service Learning & Internships
- Sustainability planning 2014-15

Student Organizations & Activism

- RU Green (in need of revival!)
- Net Impact (business and sustainability)
- RU Reforesting (conservation)
- RUrbanPioneers (Schaumburg garden)
- RISE (student activism)

Sustainability at Roosevelt

Selected Awards & Recognition in 2012-15

Campus Operations / Facilities

- LEED Gold: Wabash Building
- LEED Silver: Goodman Athletic Center
- Tree Campus USA and NWF Certified Habitat for RU Schaumburg
- Green Innovation / Green School award from USGBC
- Green College selection by Princeton Review 2013 & 2014
- IL Governor's Sustainability Award 2013 & 2014 (Gold recognition)

Academics

- Business: Real Estate grad students win 2013 & 2014 Eisenberg competition
- Science: Conservation Biology students travels to Tanzania to do environmental conservation; chemistry and environmental science students conduct research on local ecosystems
- Sustainability Studies: students win prestigious NSF research fellowship, garner local internships, lead campus sustainability planning, write for SUST blog, create websites, doing service learning

Sustainability Studies Program (Founded 2010): Major and Minor Options

- **Fosters environmental literacy** through interdisciplinary work in the natural sciences, social sciences, and humanities;
- **Engages public policy** concerns surrounding consumption, energy usage, and viable economic growth;
- **Explores social justice** issues on a range of fronts, including environmental justice, resource allocation, urban development, and social equity;
- **Educates students to be leaders** on issues of sustainability, one of the critical issues of the 21st century.

Sustainability and RU's Academic Programs / Institutes

Sustainability Studies

Biology & Chemistry

Bennett Institute of Real Estate

Hospitality & Tourism Management

Environmental Science

Mansfield Institute for Social Justice

What Is Nature?

Picture something that comes to mind immediately . . .

What Is Nature?

Rocky Mountains, Crested Butte CO (M. Bryson, 2014)

What Is Nature?

Woodford County, central IL (L. Bryson, ~2010)

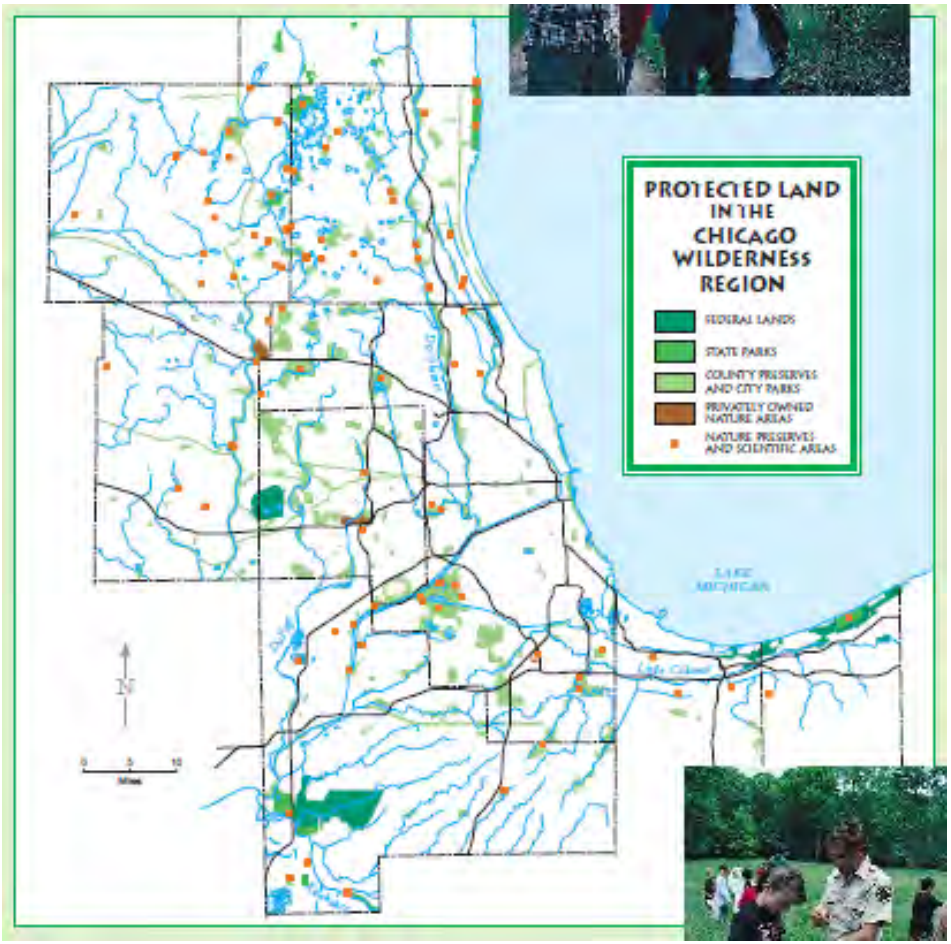
What Is Nature?

Canada Glacier, Taylor Valley, Antarctica (M. Bryson, 1991)

What Is Nature?

What are we looking at? Where are we?

Geography of Chicago's Wilderness



Protected lands of the Chicago region (source: Atlas of Biodiversity, 2000)

Is this Nature?

Chicago's lakefront

Is this Nature?

Chicago Lights Urban Farm, Spring 2013 (M. Bryson)

Sustainability

The 21st Century's Greatest Imperative

Mr. Will Allen -- Urban Farmer, Founder of Growing Power, & Sustainability Entrepreneur

Climate Change

Biodiversity Loss

Urbanization & Population Growth

Pollution

Clean Energy

Economic Development

Sustainable Agriculture

Social Justice & Equity

Environmental Stewardship

What Would a Sustainable Future Look Like?

Hiking Northerly Island, 2011
(photo by L. Bryson)

Environmental resources are conserved for both future human generations as well as non-human biota.

Economic development occurs not at the expense of the natural environment, but in a way to mitigate ecological costs and impacts.

Equity – social, economic, and environmental justice – governs the process of sustainable development.

Exploring the Chicago River

Understanding the river as a modified natural ecosystem (natural sciences)

Developing conservation policies (social and natural sciences)

Representing the river as a cultural resource (arts and humanities)

Restoring the river: water quality, biodiversity, riparian zone integrity, citizen access and recreation (all disciplines)

Sense of Place | Urban Sustainability

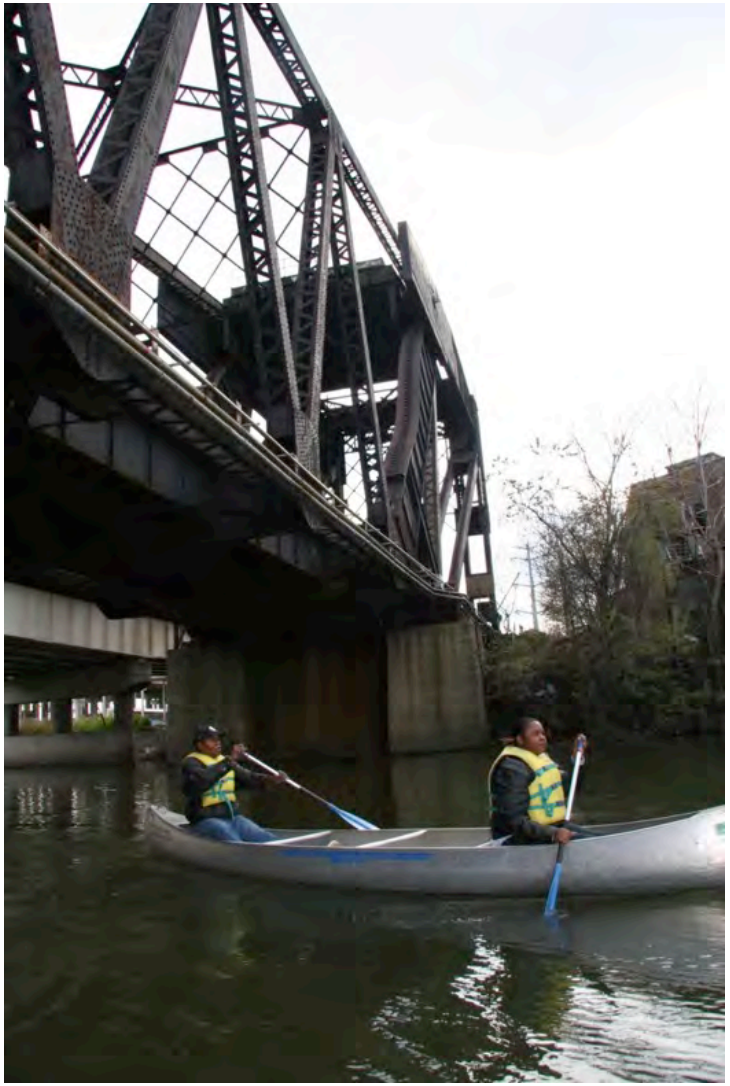
Exploring the Chicago River

Connecting Nature, Science, Ethics, and Sustainability

Context
Urban Nature in Chicago

Science
Exploring the Chicago River (and beyond)

Ethics
Thinking like a watershed



Chicago's Urban Nature

Chicago in 1857

Chicago's Urban Nature

North Branch of the Chicago River (Spring 2010)

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Canoeing the North Branch

Heading south into the Loop where the branches meet;
Wolf Point in the background (October 2011)

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Chicago's Urban Nature

WMRD's Racine Avenue Pumping Station, Bubbly Creek, Chicago (May 2009)

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Chicago's Urban Nature

Stickney Wastewater Treatment Plant, SW of Chicago (courtesy MWRD)

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The Abuse of Nature

Combined Sewage Outlet, Bubbly Creek, Chicago

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The Abuse of Nature

What's weird about this old photo?

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The Abuse of Nature

Chicken on Bubbly Creek, Chicago, 1911 (Chicago Historical Society)

The Control of Nature

A river reversed, a problem created

The Chicago and Calumet rivers were once tiny waterways that trickled into Lake Michigan. Begining in 1900 the city dug a series of canals that reversed their flows so they could carry the city's waste into the Mississippi River basin, and away from the lake – the city's drinking water source. A push is now under way to engineer a system to re-establish the natural hydrological divide between Lake Michigan and the Mississippi.

Sources: Great Lakes Fishery Commission

Journal Sentinel

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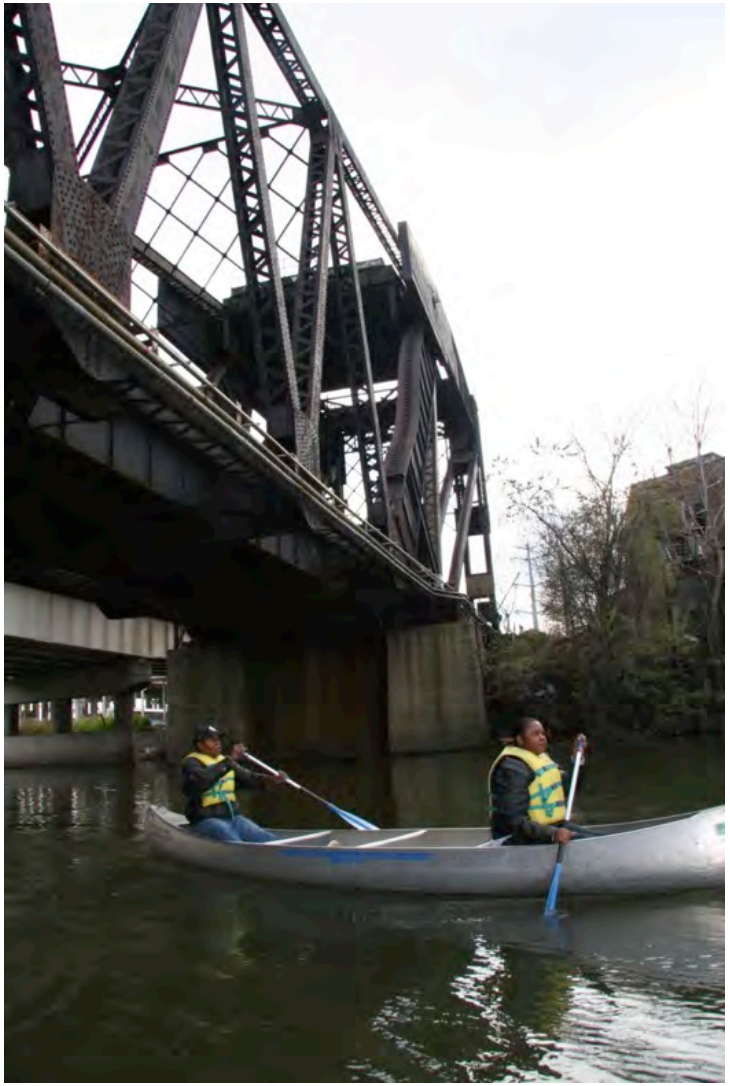

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Canoeing the North Branch

Paddling the West Fork of the Upper North Branch (October 2012)

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Canoeing the South Branch

Canoe trip down Bubbly Creek, an industrialized tributary of the South Branchof the Chicago River (May 2009)

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Water Quality: Physical & Chemical Indicators

Temperature

pH

Turbidity

Dissolved oxygen (DO)

Nutrients (nitrogen and phosphorus)

Bacterial indicators (coliform)

Metals and organic contaminants (lead, copper, benzene, PCBs, hexavalent chromium)

Emerging contaminants (pharmaceuticals, synthetic hormones, flame retardants)

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Water Quality: Biological Indicators

Phytoplankton

Zooplankton

Benthic, Emergent,
& Floating Vegetation

Microbes

Macroinvertebrates

Fish

Birds

Mammals

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Water Quality: Biological Indicators

Group 1 – These organisms are generally considered to be intolerant to pollution

Alderfly Larva

Dobsonfly Larva

Snipe Fly Larva

Stonefly Larva

Group 2 – These organisms are generally considered to be moderately intolerant to pollution

Freeswimming
Caddisfly Larvae

Case Maker

Clams

Fingernail

Asiatic

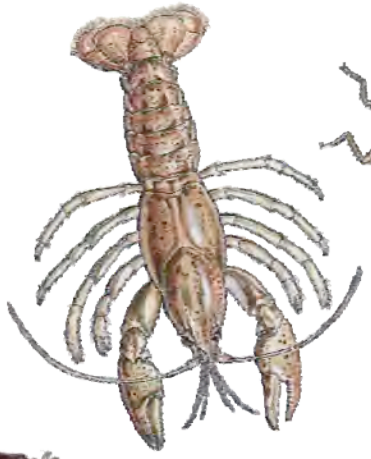
Mussels

Zebra Mussel

Water Penny

Damselfly Larvae

Broadwinged
Narrowwinged


Crayfish

Dragonfly Larvae

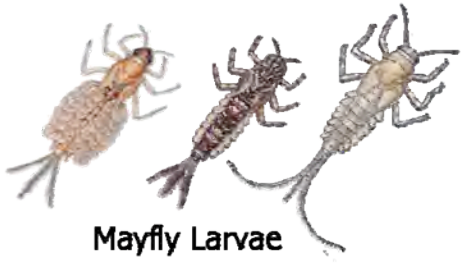
Skimmers
Darner

Riffle Beetle

Larva

Adult

Cranefly Larva


Mayfly Larvae

Identifying macro-invertebrates from the
Chicago River's North Branch (May 2010)

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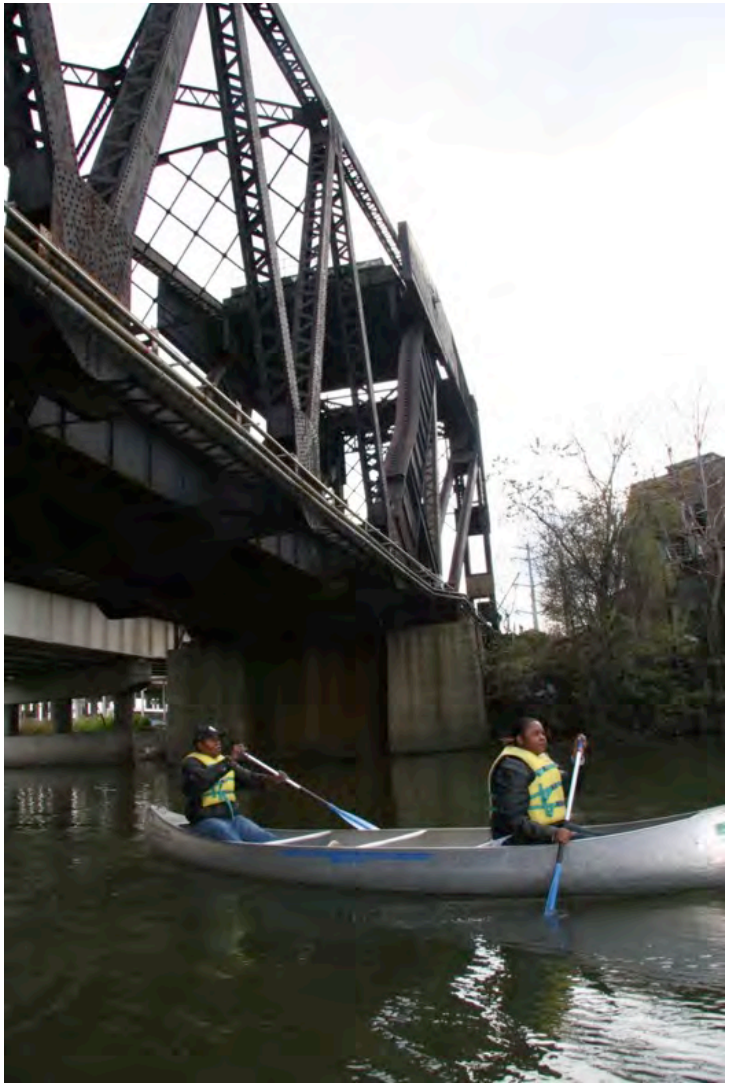
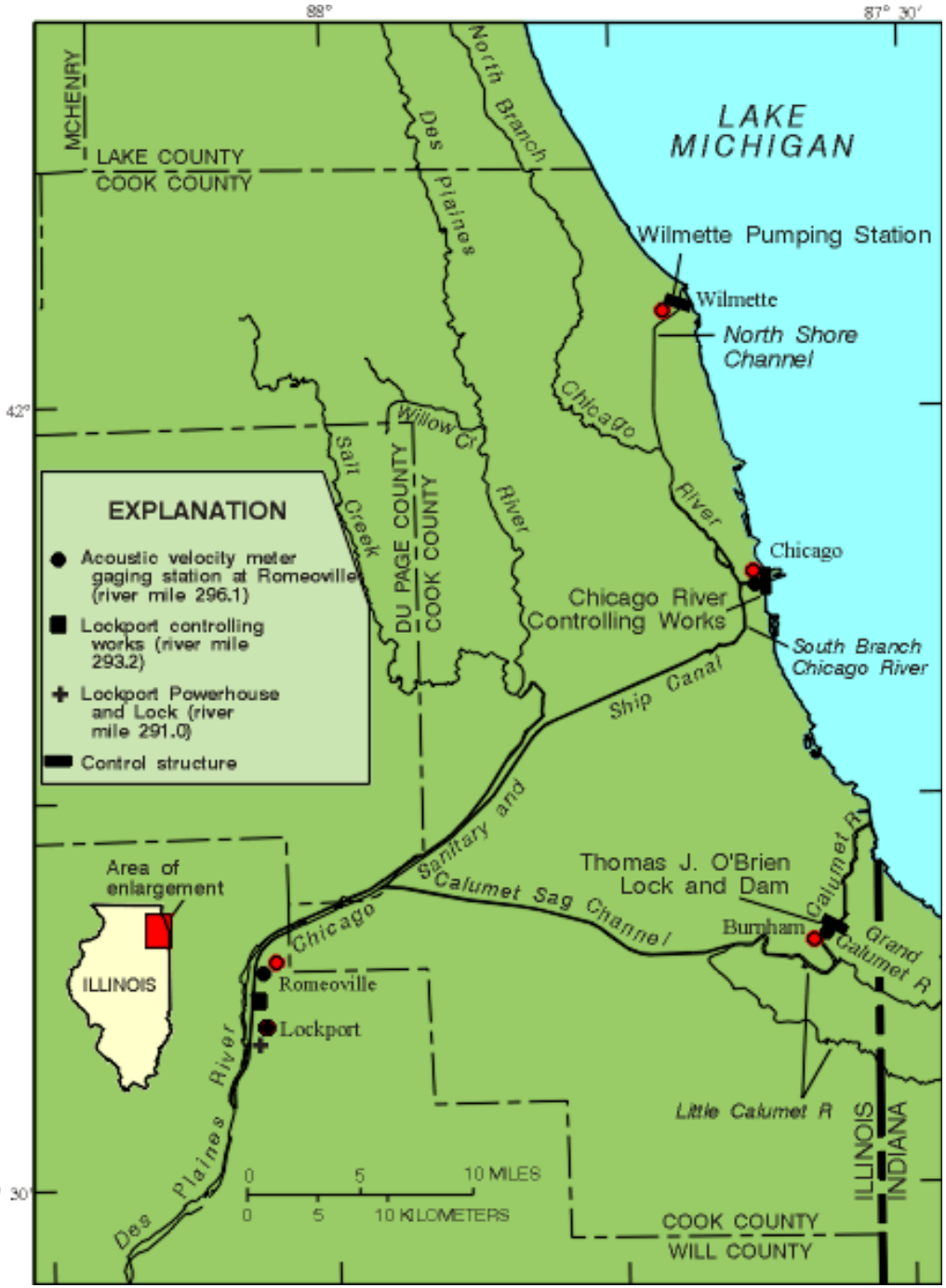


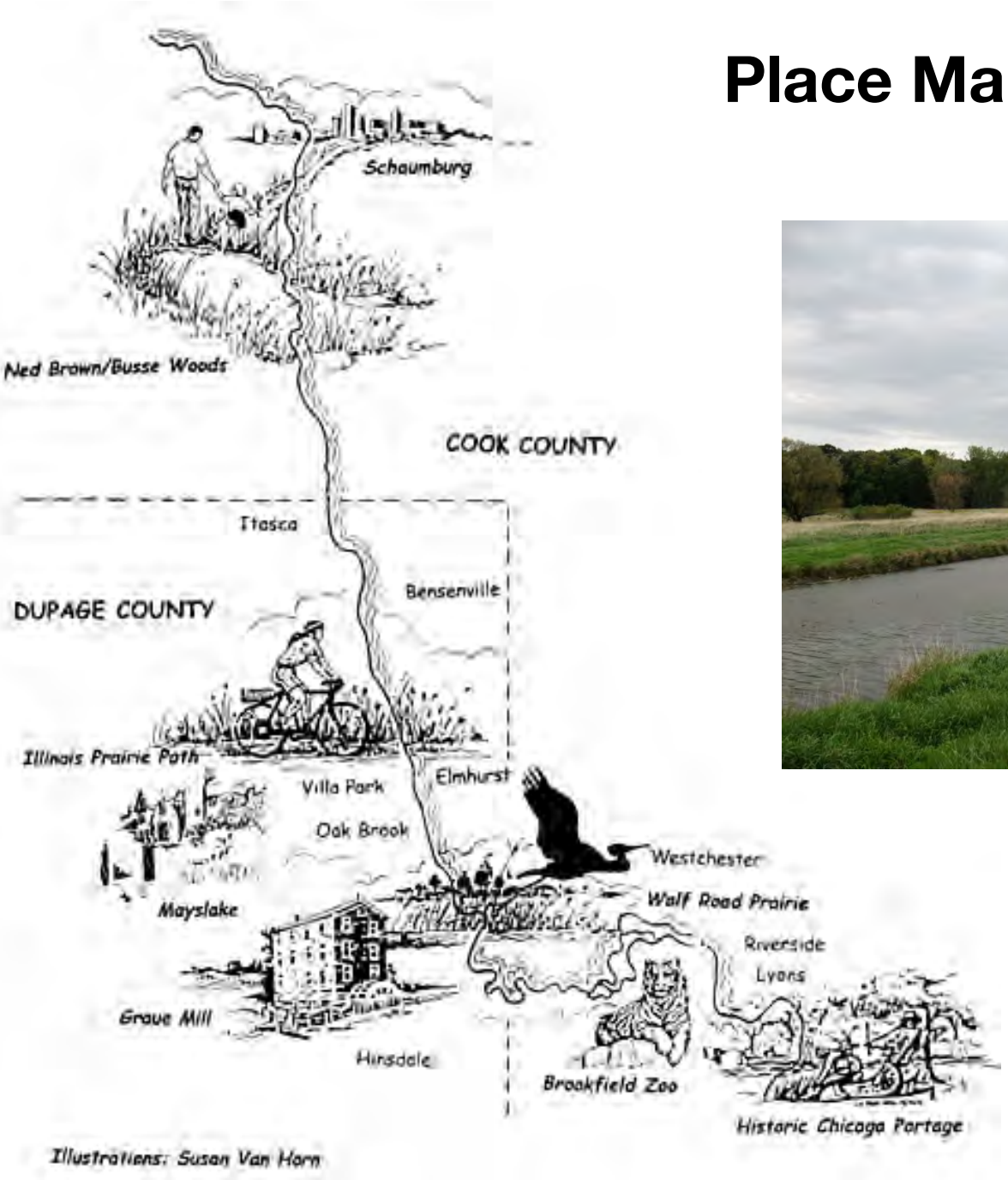


River-based Geography

Chicago **A**rea **W**aterway **S**ystem: rivers, canals, locks, and controlling structures

Note the relation of the **CAWS** to the Des Plaines River and Salt Creek

Place Map of Salt Creek



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Salt Creek Watershed

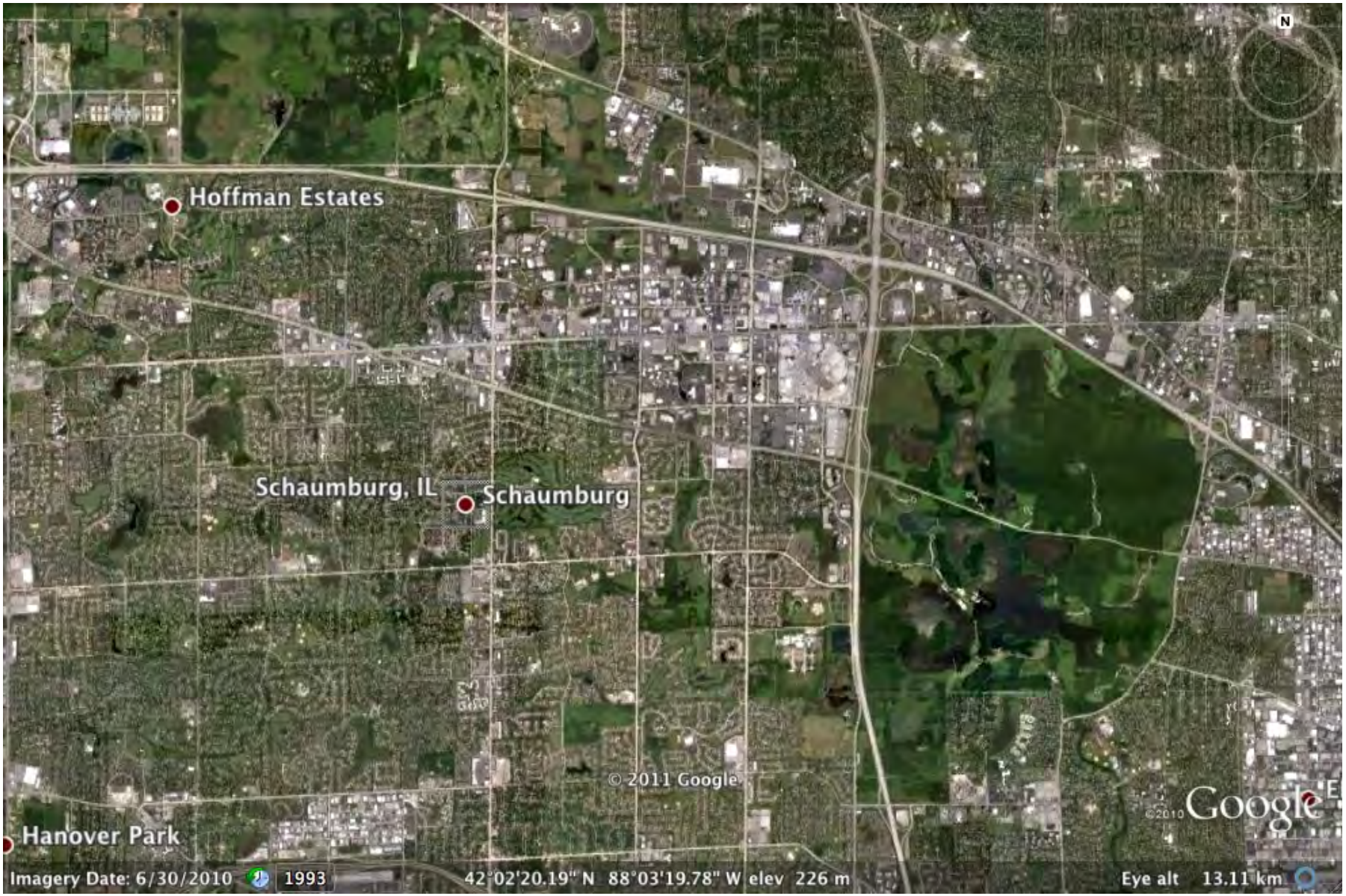
Covering roughly 150 square miles, the Salt Creek watershed incorporates more than 30 municipalities that are home to nearly 500,000 people.

"Development"

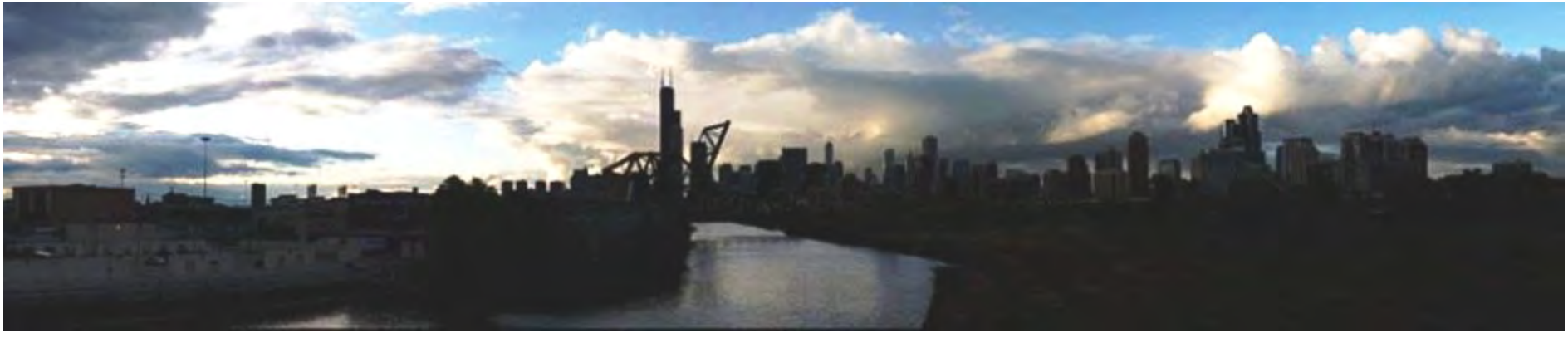
Wastewater Treatment

MWRDGC's John Egan Wastewater Treatment Plant, Schaumburg IL / Busse Woods

Green Infrastructure



Sustainability Studies Major / Courses



Core Courses

SUST 210 Sustainable Future
SUST 220 Water
SUST 230 Food
SUST 240 Waste

Advanced Courses

SUST 310 Energy & Climate Change
SUST 320 Sprawl, Transportation, & Planning
SUST 330 Biodiversity
SUST 340 Policy, Law, & Ethics

Special Options

SUST 350 Service & Sustainability
SUST 390 Special Topics
SUST 395 Internship

You'll take classes that look like this:

SENCER 2013 Symposium, RU Schaumburg Campus (full disclosure: this was an awesome session dedicated to civically engaged science/math student research)

And possibly classes that look like this:

SUST 220 Water canoe trip on the North Branch
of the Chicago River, Fall 2012 (M. Bryson)

Or this:

SUST 350 Service & Sustainability students working at Eden Place Nature Center and Farm, Chicago's South Side, Fall 2014 (M. Bryson)

I Get Credit for Doing This? Cool!

Sustainability Studies Blog and Website (and, oh yes, Facebook page)
Schaumburg's Sustainable Future (student research project)
Prof. Mike Bryson's website/blog