

Sustainability and Water

Exploring Science, Policy, and a Sense of Place



Mike Bryson and Amanda Zeigler
Sustainability Studies Program at RU
Chicago River Congress | Workshop Session
25 February 2012



Chicago River Congress Workshop Highlights

Context

Sustainability and Water in the
Chicago Region

Field Studies

Exploring the Chicago River (and beyond)

Student Research

The Water in Schaumburg Project

Program Snapshot

Sustainability Studies at Roosevelt





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Water and Sustainability



Jardine Water Filtration Plant on Chicago's Downtown Lakefront

In a Sustainable Future:



Debris floating in Bubbly Creek, a tributary of the South Branch of the Chicago River

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.

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The Chicago River



Science, Nature, and a Sense of Place

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

Developing policies regarding water quality, river use, sewage treatment
(social and natural sciences)

Representing the river as a cultural resource (humanities)

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



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Canoeing the South Branch



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



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Dealing with Wastewater



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



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Canoeing the North Branch



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

Assessing Water Quality

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)



Combined Sewage Outfall at the confluence of the North and South Branches (October 2011)



Testing the water quality of the **Chicago River's North Branch** (May 2010)



Exploring the waters of the **Des Plaines River Wetlands**
Demonstration Project (October 2010)

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Water in Schaumburg

Capstone research project for Prof. Mike Bryson's Fall 2011 Water class was a collaborative web-based research project that examines water sustainability issues in and around the Village of Schaumburg.

Student Researchers:

Water Supply — Belinda Bermea, Kenton Franklin, and Keith Nawls

Wastewater Treatment and Management — Allison Mayes, Ben Schulman, and Alan Swartz

Wetland Ecology and Conservation — **Amanda Zeigler** and Carolina Gamboa

Salt Creek Watershed Ecology and Management — Tom Hareland, Angela Lebron-Cola, and Mary Beth Radeck



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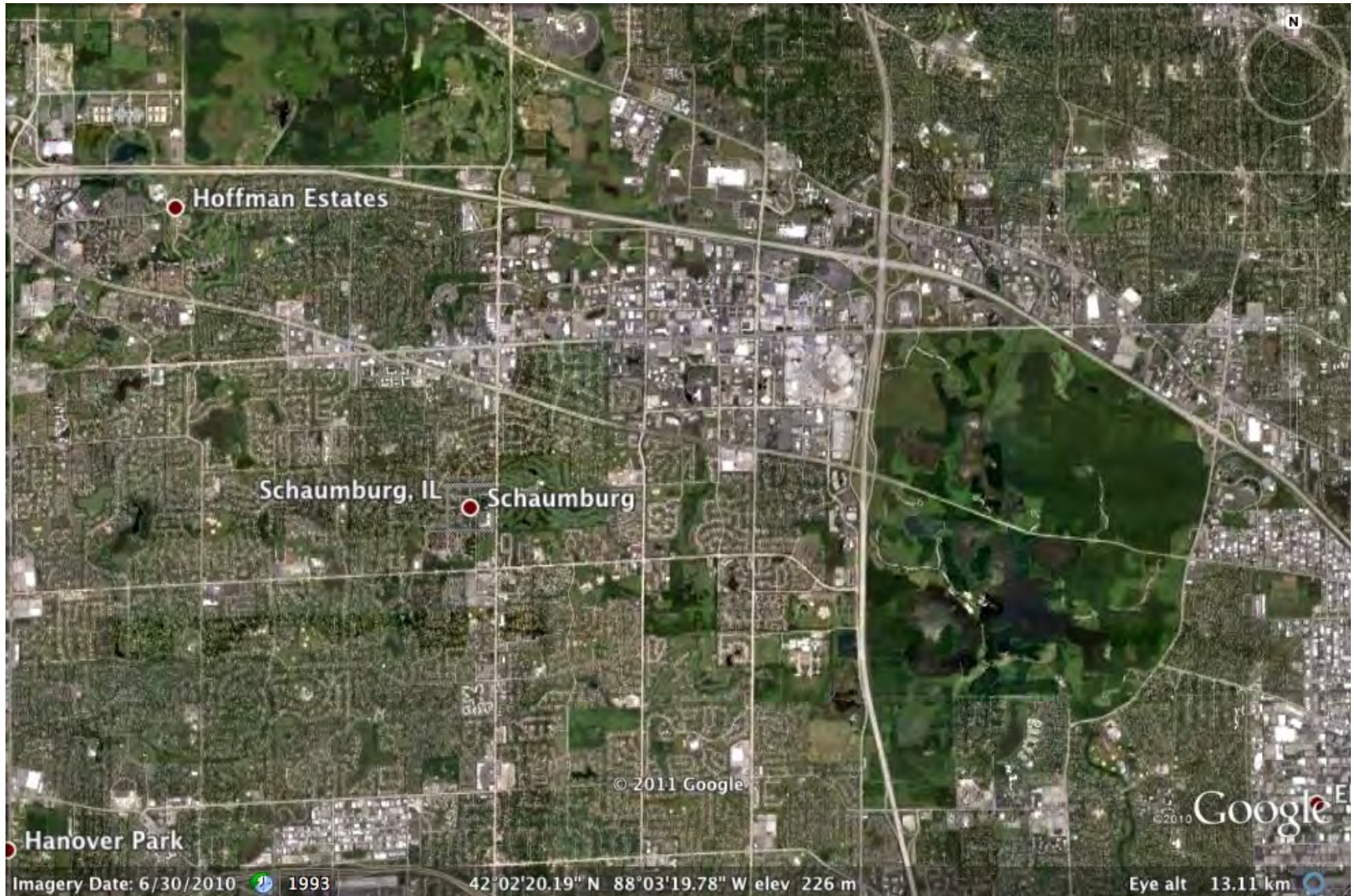
Suburban Hardscape





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Green Infrastructure





Wastewater Treatment



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



Salt Creek Watershed



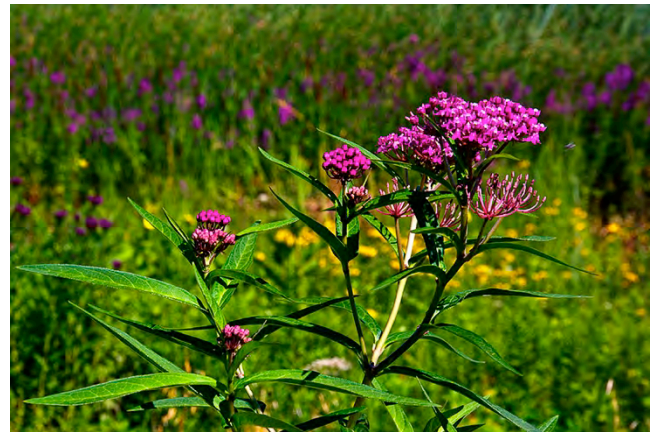
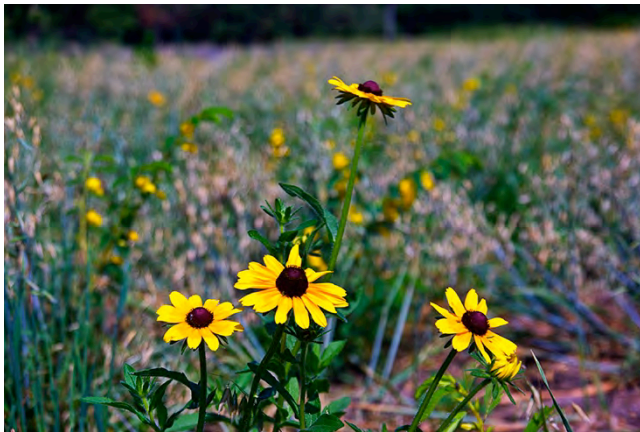
Covering roughly 150 square miles, the Salt Creek watershed incorporates more than 30 municipalities that are home to nearly 500,000 people.



Wetland Restoration



Retention Pond as Wetland



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Sustainability Studies at RU



- **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.



Core Courses

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

Advanced Courses

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

Special Options

SUST 350 Service Learning
SUST 390 Special Topics



Crosscutting Themes

Science and Environmental Literacy
Environmental and Social Justice
Urban and Suburban Systems

Pedagogical Highlights

Interdisciplinary Learning
Field Trip Experiences
Service Learning Opportunities
F2F, Online, and Hybrid Classes

I Get Credit for Doing This? Cool!



Check Out these Online Resources:

Sustainability Studies [Blog](#) and [Website](#)
[Schaumburg's Sustainable Future](#) (ongoing student research project)
Prof. Mike Bryson's [website/blog](#)