

# Integrated Water Resources Planning

## Project Update and Community Discussion

Metropolitan Planning Council



# Meeting Agenda

- Integrated Water Resources project and team overview
- Northeastern Illinois' water resources: Where Lake Zurich stands
- Community survey results
- Project team findings
- Small group discussion
- Next steps

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# Integrated Water Resources project and team overview



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# Community Building Initiative

- The Community Building Initiative (CBI) works with community partners throughout greater metropolitan Chicago to tackle development challenges that demand a creative vision for the future, consistent with MPC's mission for a more equitable, sustainable, and competitive region. The initiative draws on MPC's core strengths in planning and policy development to assist communities as they respond to local issues related to housing, transportation, environment, and sustainable economic development. These community success stories demonstrate the local and regional impact of MPC's policy goals and inform our regional, state and federal advocacy.



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# Project Team

- Metropolitan Planning Council: [www.metroplanning.org](http://www.metroplanning.org)
- Center for Neighborhood Technology: [www.cnt.org](http://www.cnt.org)
- Chicago Metropolitan Agency for Planning: [www.cmap.illinois.gov](http://www.cmap.illinois.gov)
- CBI Task Force



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# CBI Task Force

Lake Zurich CBI Task Force	Organization	Role/Expertise
Ed Glatfelter	Retired from Alliance for GL, retired from ISWS, retired from Central Lake Water Authority	utility management, water resources planning
Mark Emory	Christopher Burke Engineering	wastewater and stormwater engineering
Paula Worthington	University of Chicago, Harris School of Public Policy	local public finance and cost-benefit analysis
Cary McElhinney	US EPA Region 5	WaterSense, water efficiency, liaison to US EPA
Jeff Edstrom	Environmental Consulting and Technology	water/energy nexus, Member of ISAWWA Water Efficiency Committee
Jeff Mengler	Cardno Entrix	conjunctive water use, ecosystem protection
Marty Jaffe	University of Illinois-Chicago, Center for Urban Planning and Public Administration	urban planning, local government management, regional water supply planning
Jim Mann	Retired director of Ill. Clean Energy Foundation	former lawyer for Lake Michigan allocation requests
Peter Wallers	EEI	water systems management, Northwest Water Planning Alliance
Caitlin Feehan	MWH	wastewater projects, sustainable water planning and green infrastructure
Killian Tobin	Innovyze	data tracking, modeling, asset management
Owen Keenan	M.E. Simpson	infrastructure performance



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# Process

- Memorandum of Understanding
- Collection of data, maps, reports, etc.
- Community survey
- Stakeholder interviews
- Analysis and draft recommendations
- Community meeting (tonight!)
- Presentation to Village Board (Nov. 21)
- Final recommendations report



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# Memorandum of Understanding

## Scope of Services:

The purpose of the Integrated Water Resources Management Team (hereafter known as the "Team"), led by the Metropolitan Planning Council (MPC) and consisting of the Chicago Metropolitan Agency for Planning, Center for Neighborhood Technology, University of Illinois Extension, and Illinois-Indiana Sea Grant, is to advise the Village of Lake Zurich as it develops an integrated water resources plan addressing water supply, wastewater, and storm water management. The Team will be comprised of members from the above agencies as well as a CBI Task Force of technical experts from a variety of fields - public or private utilities, engineering, planning and design, real estate development, plumbing, water management, finance and cost analysis, and resource economics - that will provide their expert knowledge and assistance to complete the work.



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# Memorandum of Understanding

In order to assist the Village of Lake Zurich with assessment of its water supply needs and develop a set of recommendations, the Team and CBI Task Force will work with Lake Zurich elected officials, staff, and Project Group stakeholders to address issues including the following. These will be further refined during the initial stage of the project:

Defining the community's water goals and objectives, their impact on water management decisions within the context of water supply, wastewater, and storm water issues, and opportunities for funding;

Identifying strategies to coordinate policies across departments to protect water quality and maintain existing infrastructure, including integrating both water and "non-water" policies, such as building and plumbing codes, zoning ordinances, salt use, lawn care, parking requirements or fire protection, into water-related decision making, utilizing national best practices and standards;

Developing strategies to balance projected supply with demand management;

Developing local capacity to ensure the long-term financial viability of the water system;

Assessing optimal wastewater management strategies, including potential for economic development opportunities stemming from wastewater reuse;

Assessing storm water management, particularly in context of downtown redevelopment plan;

Defining public education and communications strategies to support implementation of the recommendations.

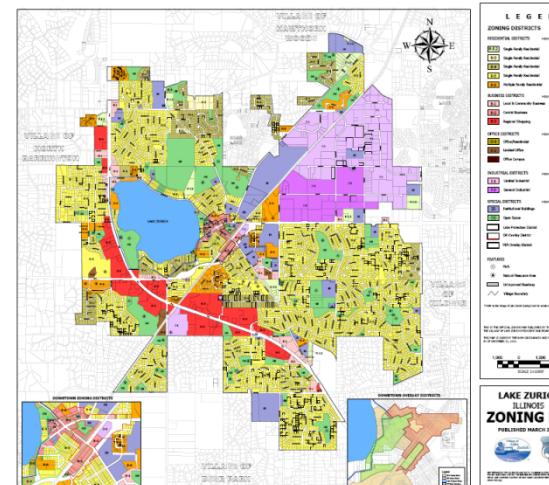
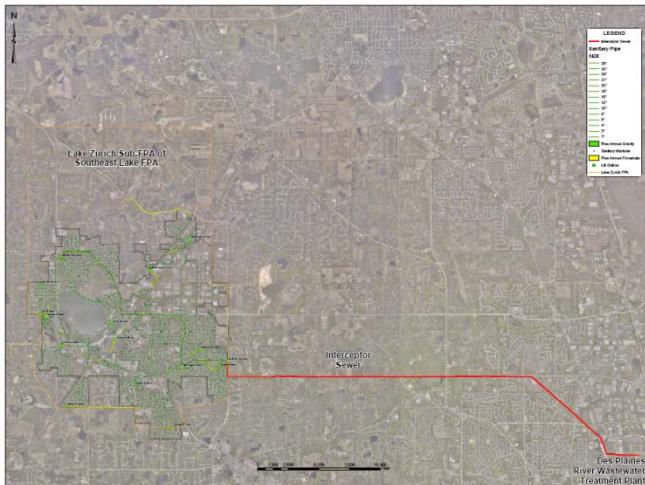


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# Information collection (examples)

1992 I&I Study (Volumes 1-3)	2010-11 Road Salt Budget	2011-2012 Stormwater Budget	Green Mechan Code TOC.pdf	App for Allocation June 2009
2008 Water Survey.pdf	2010-11 Stormwater Budget	Historic Water Residential Water Usage Chart.pdf	IDOT MS4 IL 400493 Inspections	Draft Water Study Phase I
2009 - Sanitary Survey 2.pdf	2010-11 Utilities Budget	Water capacity and water usage and wastewater loads.xls	IEPA Violation Notices to Lake Zurich	Feasibility Study Sept 2008
2009-Sanitary Survey 1.doc	2011-12 Road Salt Budget	Emergency response plan.pdf	Illinois State Water Survey SDCS2008-04.pdf	Groundwater Uncertainty
Billing Summaries 08-10.pdf	2011-12 Utilities Budget	Energy bills	Lake Zurich Form Based Regulations.pdf	... ETC.



# Stakeholder interviews (July 12)

- Current and former Village officials and staff
- Homeowners Associations
- Chamber of Commerce and businesses
- School District
- Lake County Stormwater Mgmt.
- Lake County Wastewater Mgmt.
- Lake County Forest Preserve
- Watershed groups
- Parks Dept., Fire Dept.

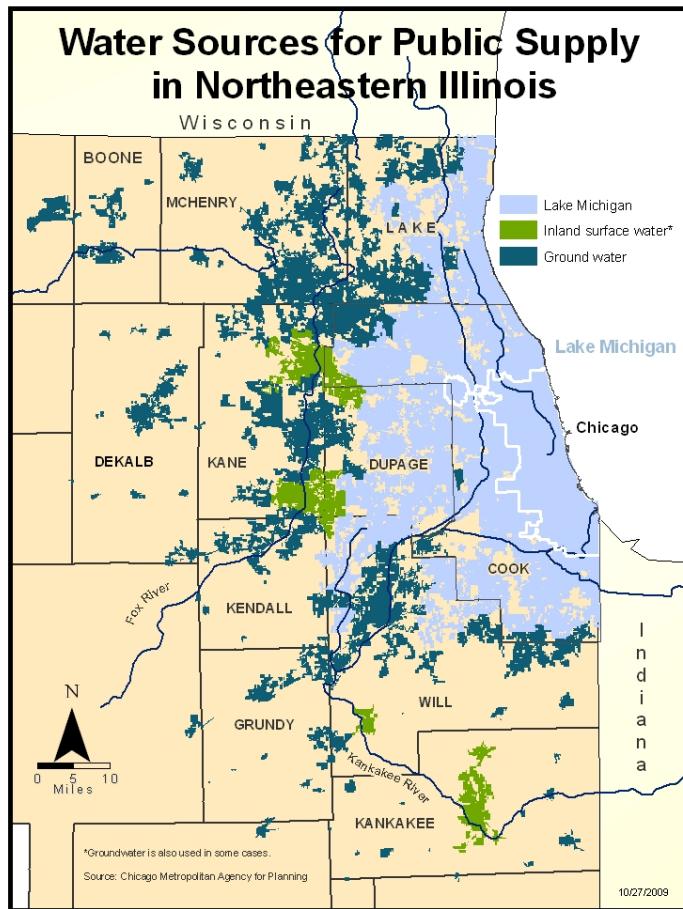


# Lake Zurich in a regional context

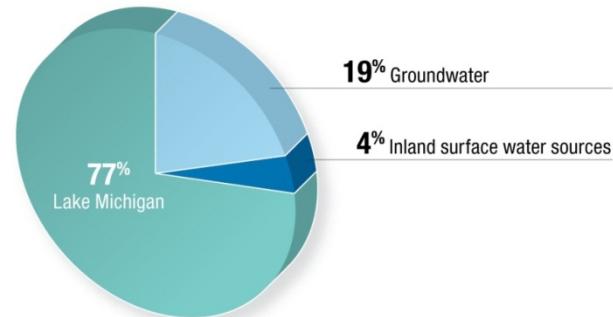
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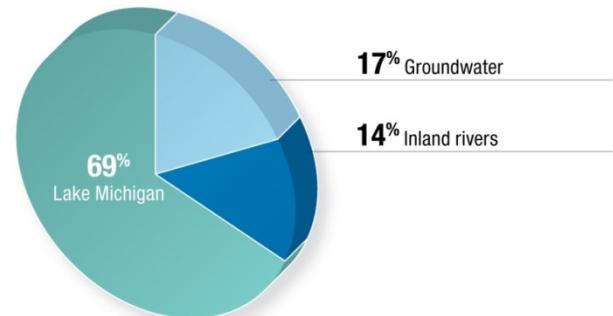
# Lake Zurich in a regional context



**Sources of water for northeastern Illinois,  
by population served, 2000**



*by relative withdrawals, 2005*



Source: Chicago Metropolitan Agency for Planning

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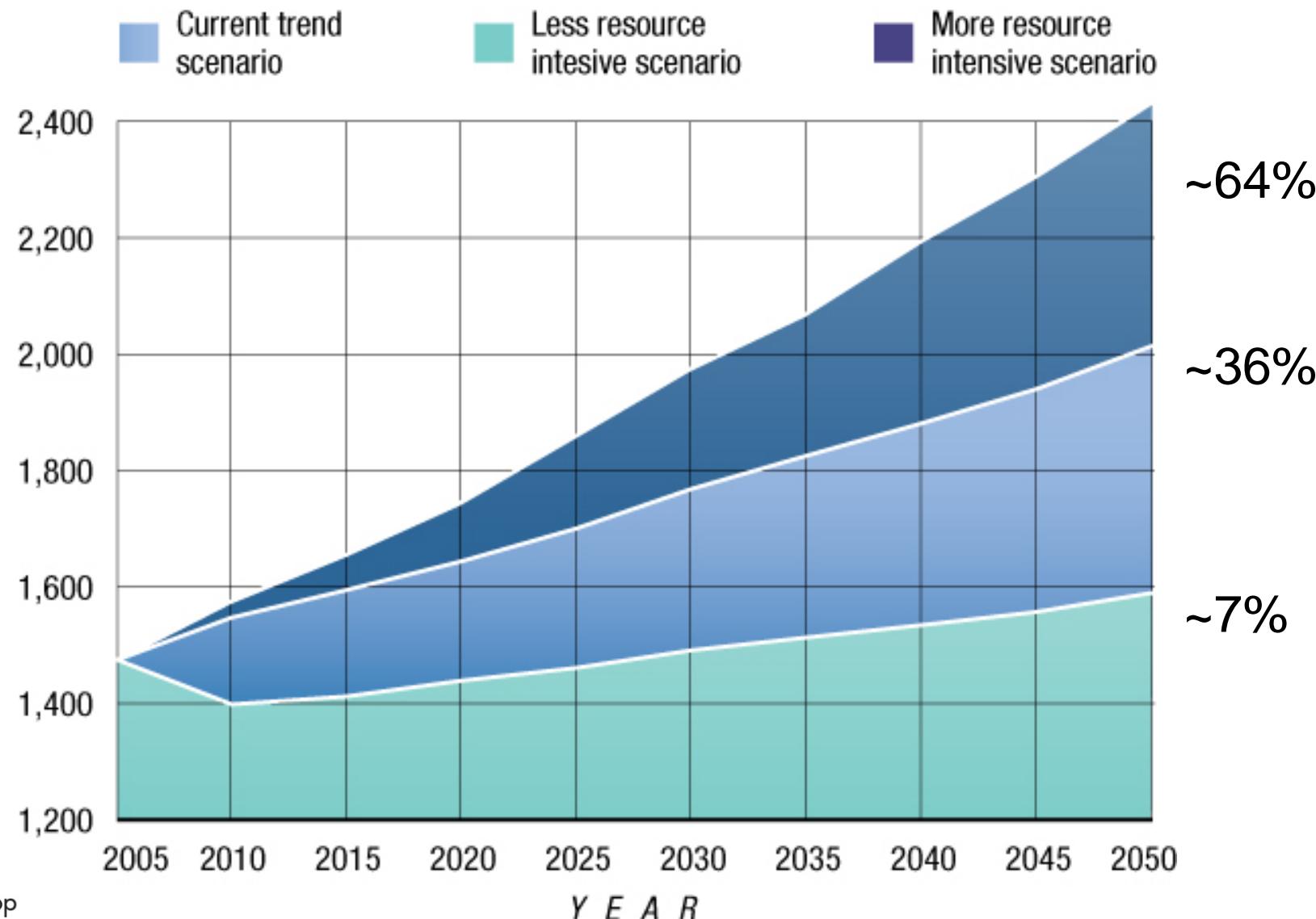


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**U**  
UNIVERSITY OF ILLINOIS  
EXTENSION

**Sea Grant**  
ILLINOIS - INDIANA

## Scenario water withdrawals: 2005 - 2050, *in million gallons per day*



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Y E A R

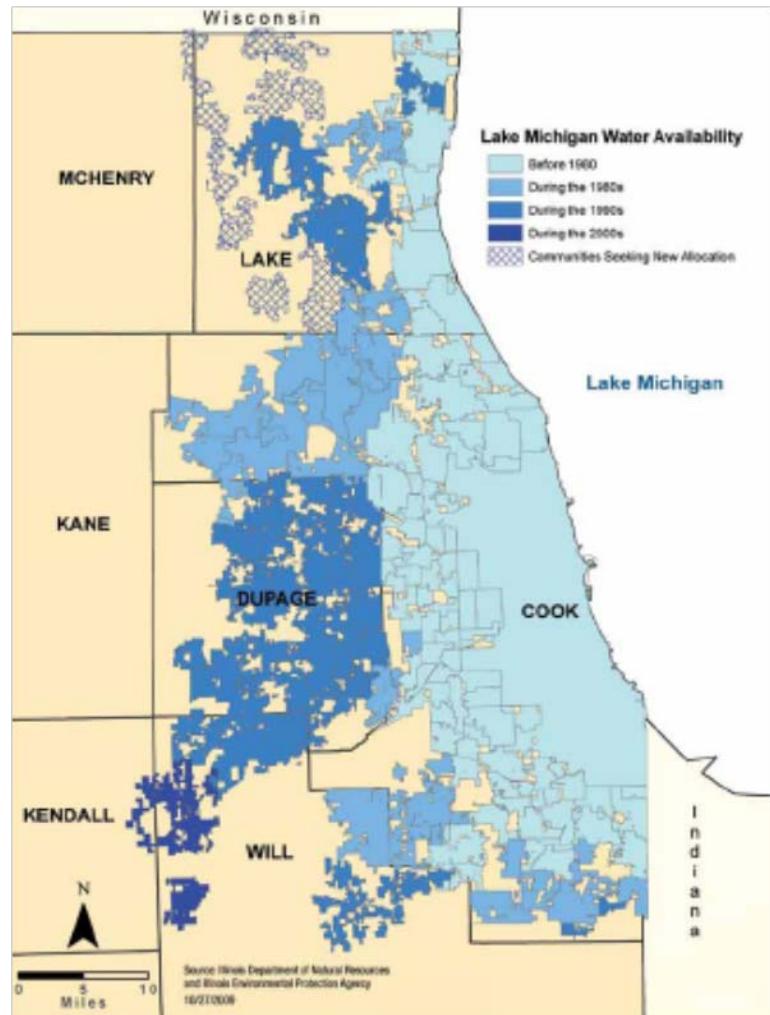
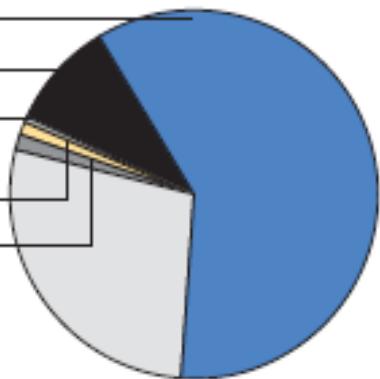
Source: B. Dziegielewski and F.J. Chowdhury, 2008, Southern Illinois University Carbondale

# Lake Michigan as a water source

## Breakdown of Illinois' Lake Michigan Diversions, Water Year 2005

In 2005, Illinois diverted 85 percent of its allowable total from Lake Michigan. Pumpage for treatment and use, as well as stormwater runoff, account for the majority of the actual diversion.

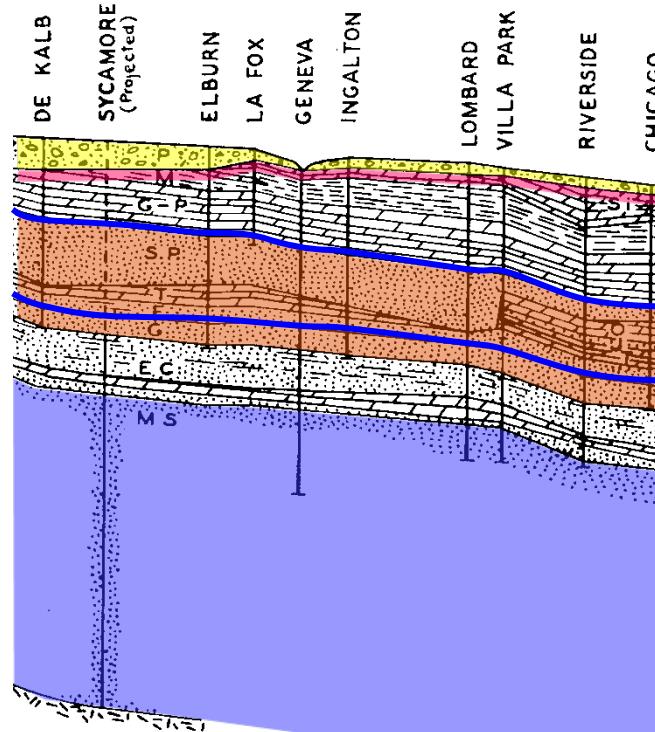
Pumpage for use	59.8%
Discretionary	9.2%
Navigation	0.8%
Leakage into locks and river	0.9%
Lock system	1.6%
Stormwater runoff	27.7%



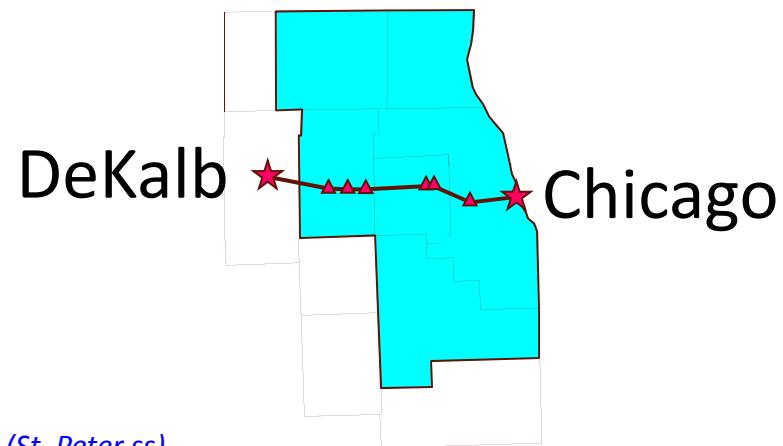


# Aquifers of Northeastern Illinois

West



East



*Top of Ancell (St. Peter ss)*

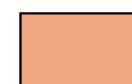
*Top of Ironton-Galesville*



Unconsolidated Aquifer System



Shallow Bedrock Aquifer



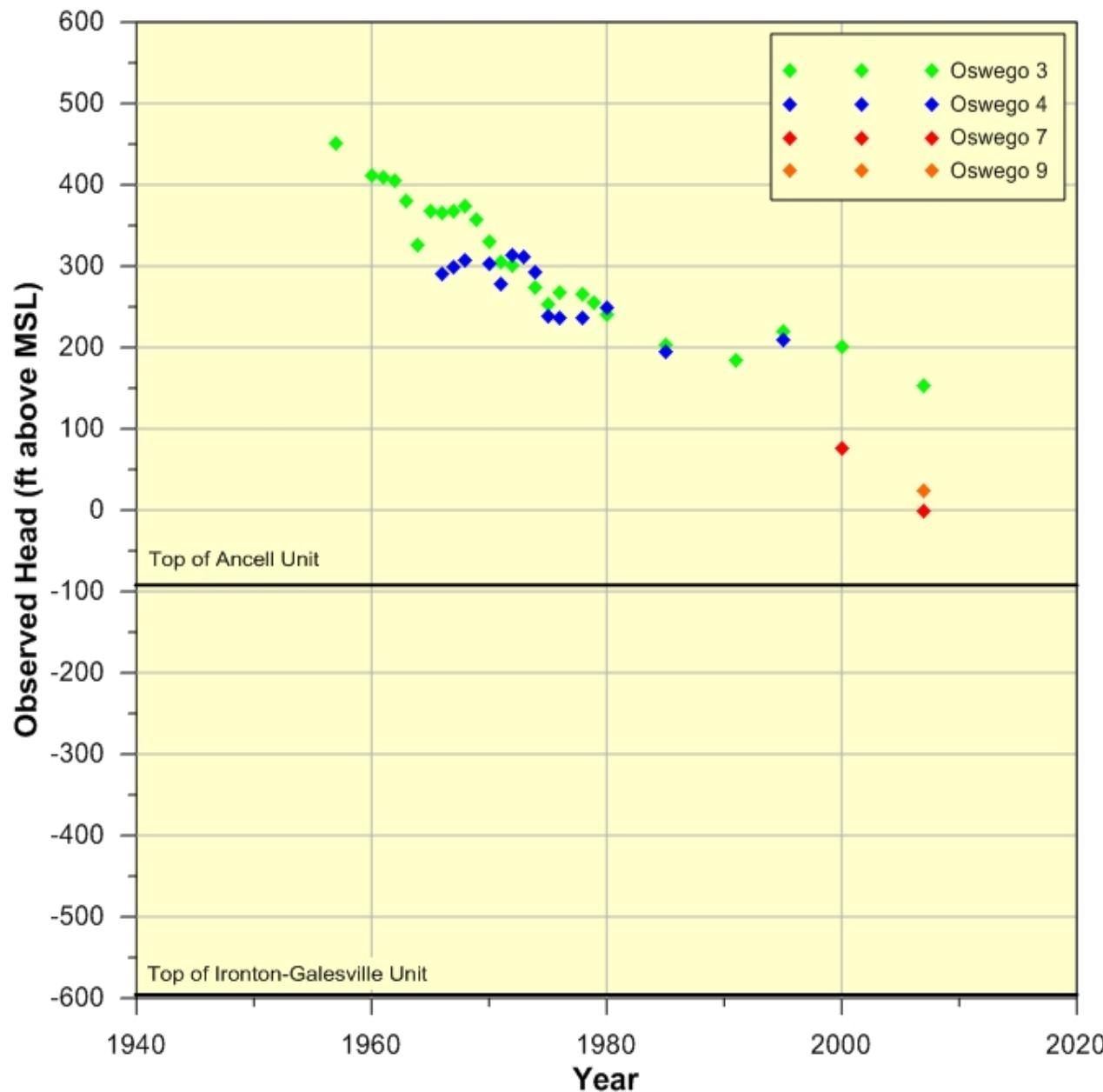
Deep Bedrock Aquifer System  
(Ancell and Ironton-Galesville sandstones)



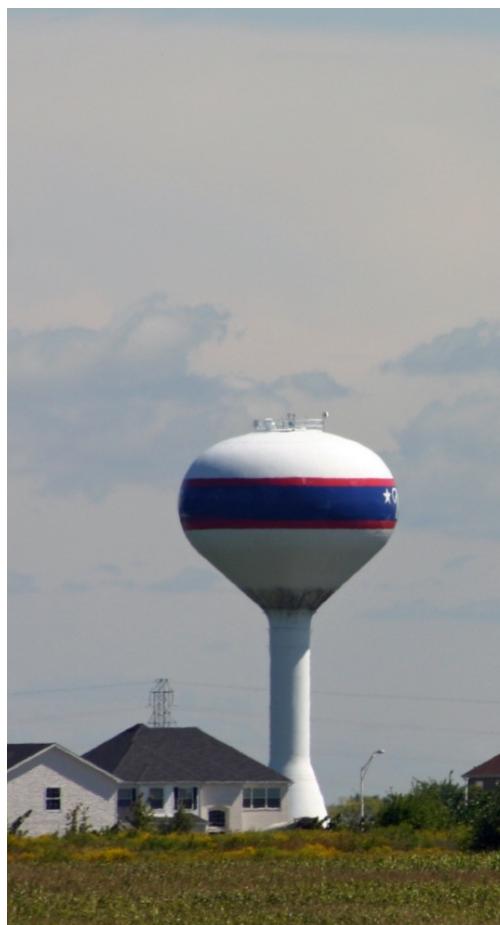
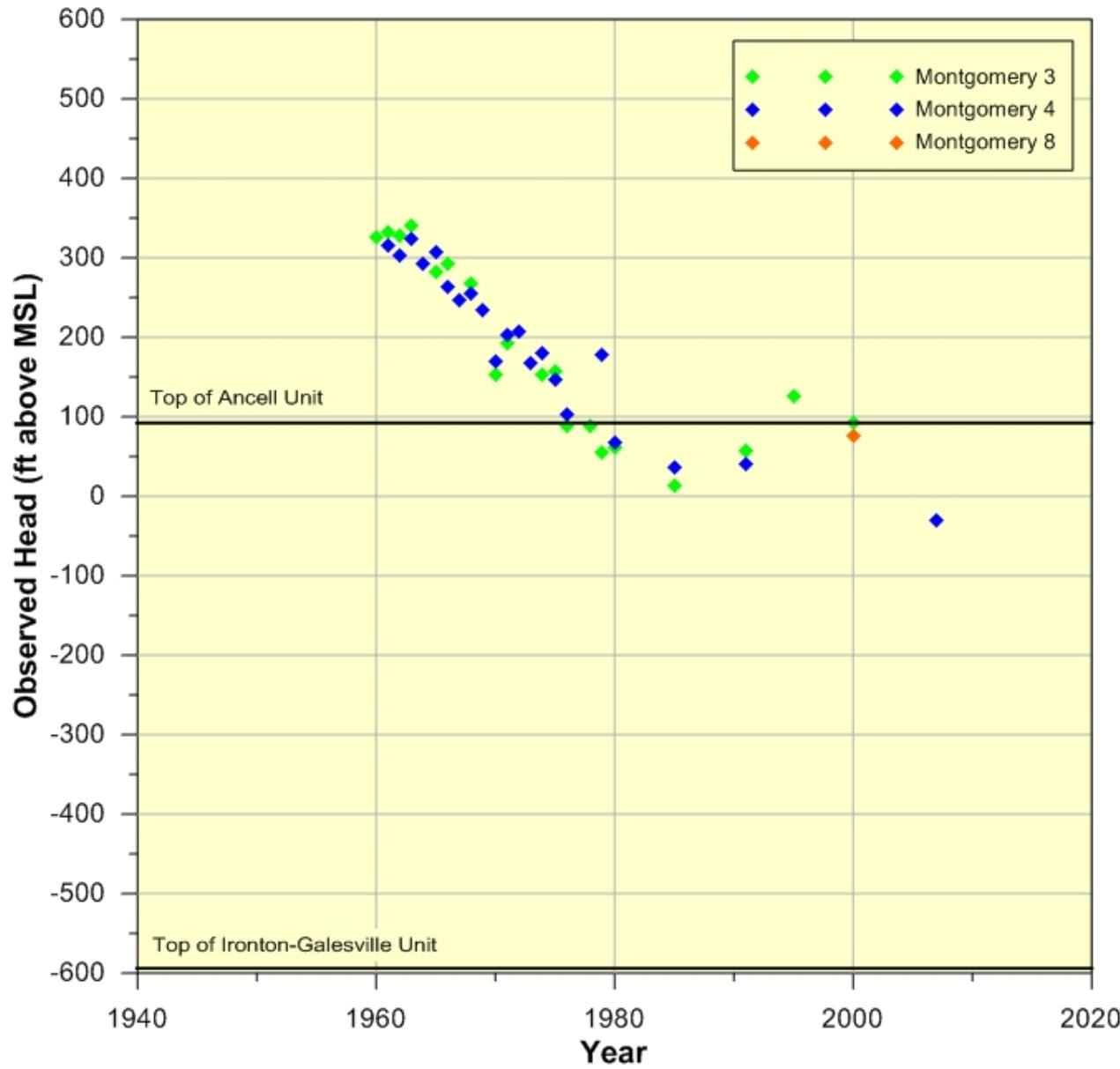
Elmhurst-Mt. Simon Aq. (saline?)

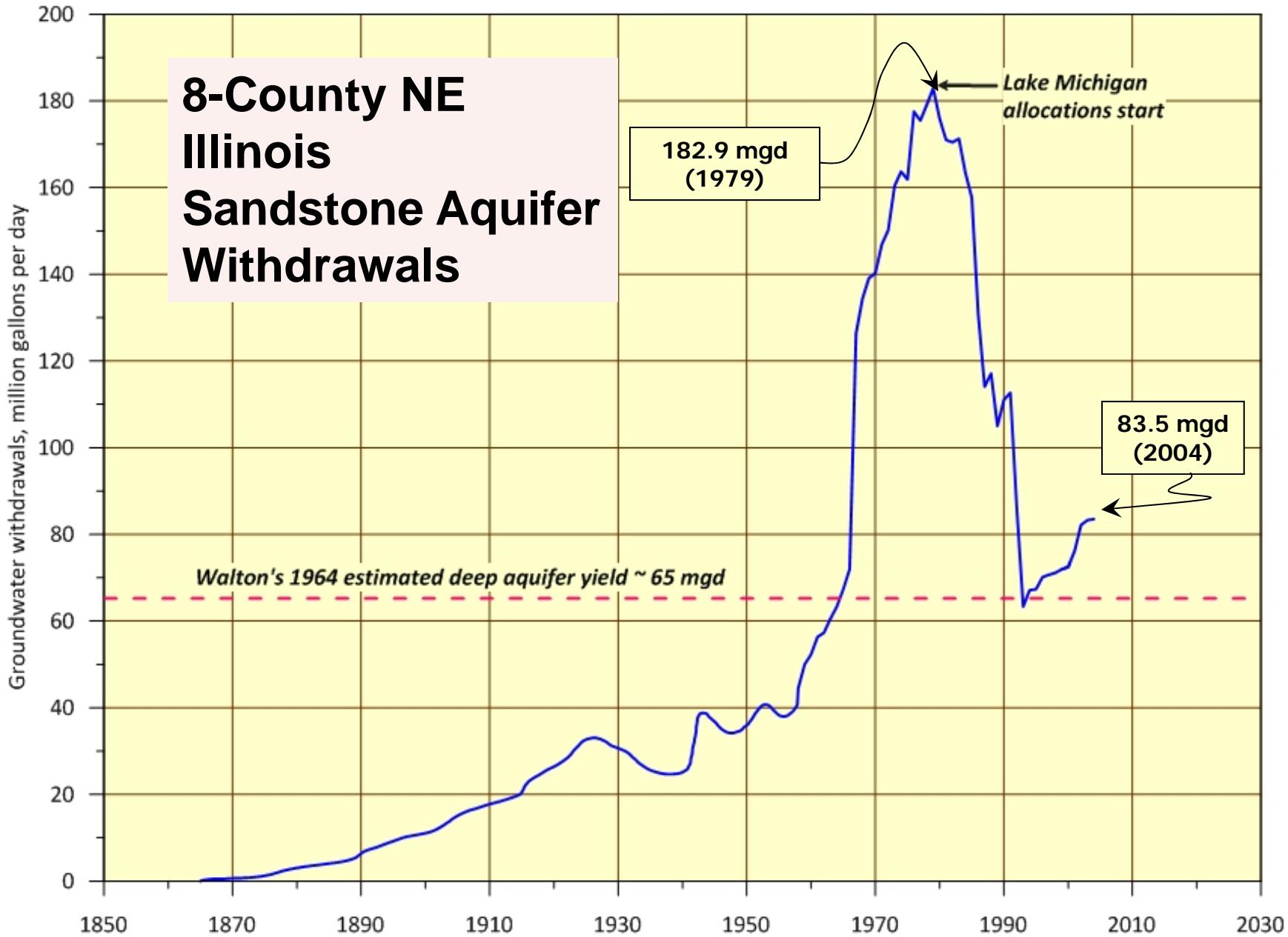
*Cross-Section Modified from Bretz (1939)*

## Observed heads in selected Oswego wells



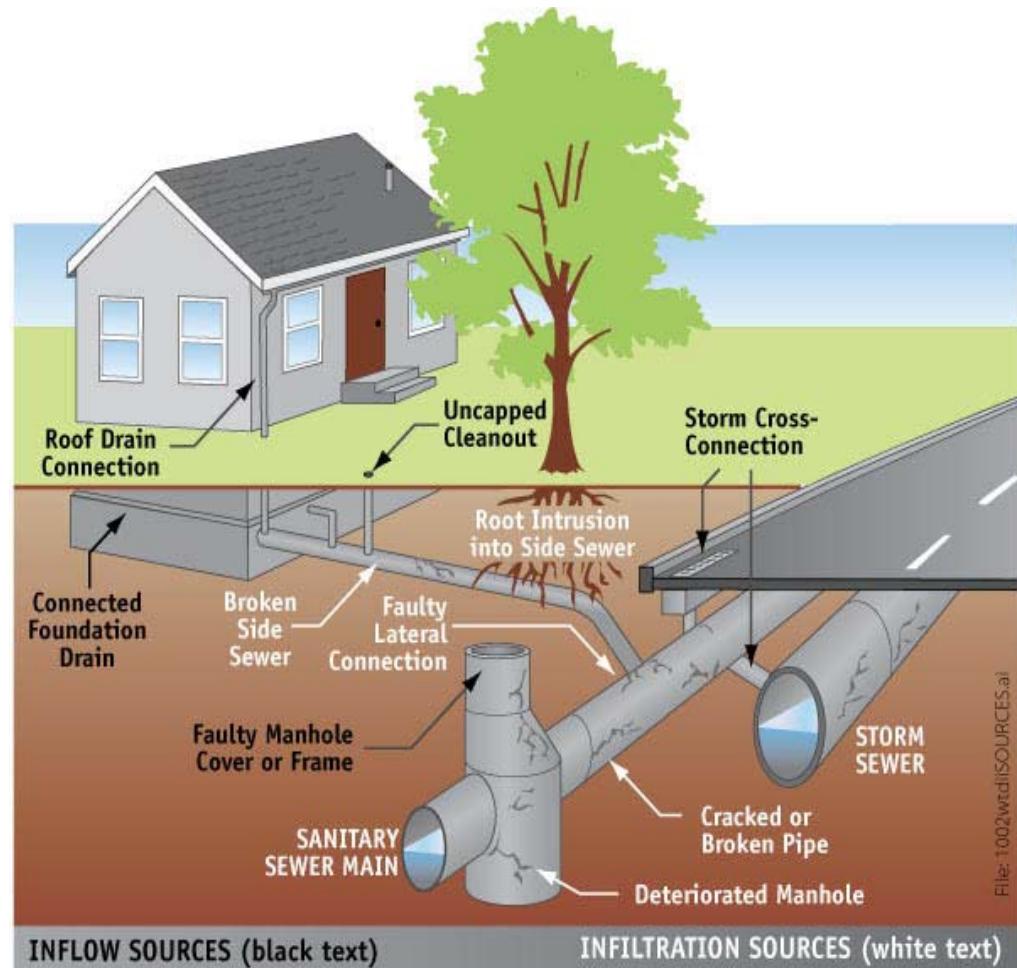
## Observed heads in selected Montgomery wells





# Wastewater and stormwater

- Lake Zurich has separate stormwater and wastewater systems, but substantial I&I is straining capacity of the latter
- Lake County is having sewer overflow problems as a result of I&I



# Community Survey results



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# Community Survey Representation

	Survey (n = 260)	2010 Census
Gender, percent male	62.7%	49.4%
Age		
25-34	12.3%	9.4%
35-44	18.4%	15.5%
45-54	26.5%	19.3%
55-64	30.7%	11.9%
65+	9.0%	7.9%
Race, percent white	97.1%	86.7%
Education, BA Degree	45.5%	30.4%
Income		
Less than 75,000	27.5%	40.8%
75,000 – 99,999	21.3%	21.2%
100,000 or more	50.58%	42.1%

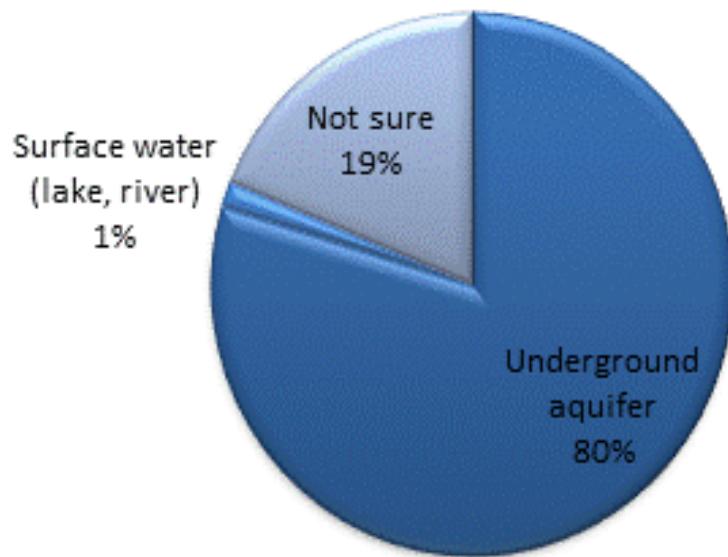


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# Community Survey results: Water source

What is the source of the water that is delivered to your home?



# Community Survey results: Water usage

## Northeastern Illinois



### Water Use Basics

In Northeastern Illinois,  
the average person:

- Uses 109 gallons of water each day.<sup>1</sup>
- Approximately 69% of this water is used inside the home for daily tasks.<sup>2</sup>

## Lake Zurich Survey

	Mean	546	Gallons
Support LM	587		
Not Support LM	311		
	Median	133	Gallons
Support LM	90		
Not Support LM	136		

<sup>1</sup> Chicago Metropolitan Agency for Planning, "Northeastern Illinois Water Supply/Demand Plan," March 2010.

<sup>2</sup> Vickers, Amy. "Handbook of Water Use and Conservation" WaterPlow Press, 2001. Data based on average indoor use in a non-conserving home – 69.3 gallons per capita per day.

# Community Survey results: Stormwater

- My home never floods: 73.5% (186)
- Where do you think stormwater in your community goes after it enters a storm drain or roadside ditch?

Directly into surface water without treatment	41.5% (105)
To a wastewater treatment plant, and then to surface water	26.1% (66)
Not sure	28.9% (73)
Other	3.6% (9)

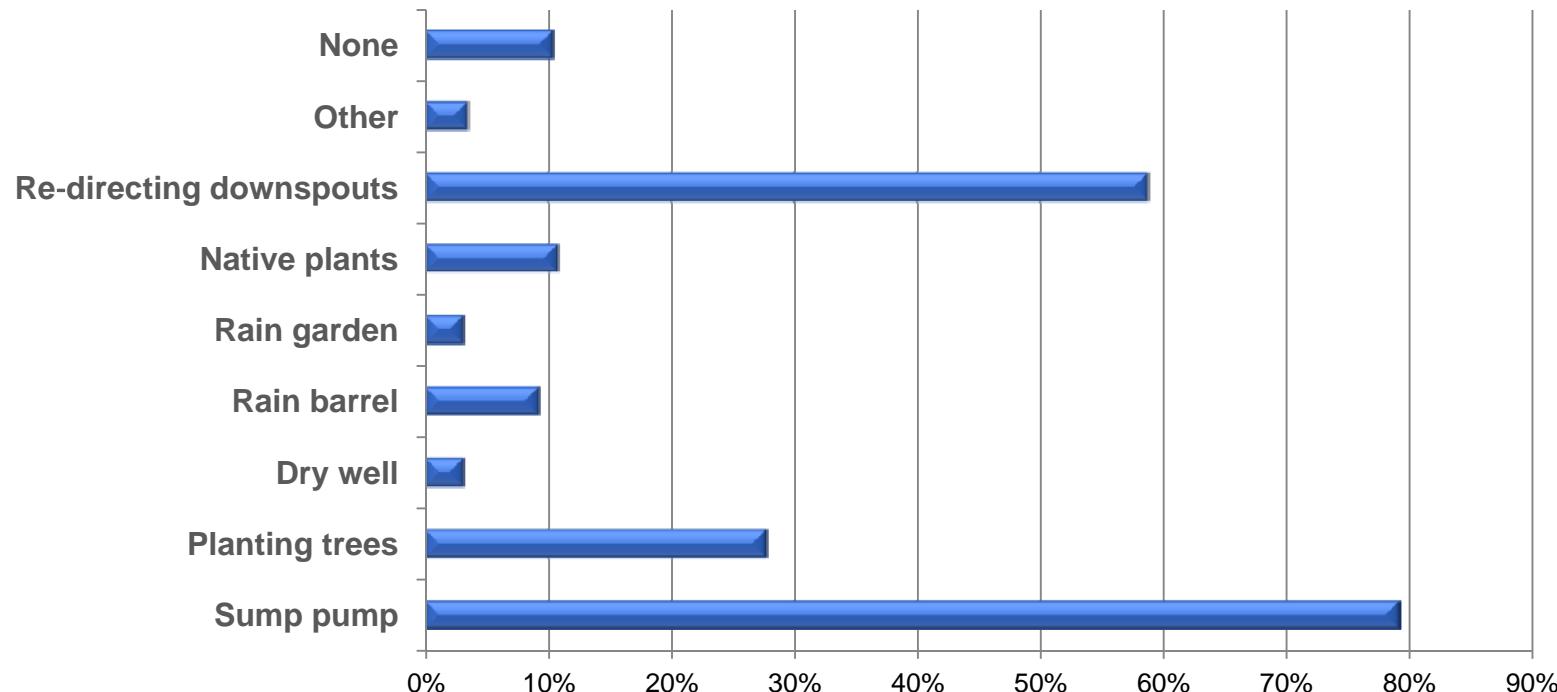


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# Community Survey results: Stormwater

Have you ever used any of the following to manage stormwater on your property?



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# Community Survey results: Future water choices

## How often does your household drink bottled water at home?

Never	<b>17.8% (46)</b>
Infrequently	<b>25.6% (66)</b>
Sometimes	<b>16.7% (43)</b>
Frequently	<b>15.1% (39)</b>
Always	<b>24.8% (64)</b>

## What percentage of all your household's drinking water consumption at home comes from bottled water?

Response: **35.6% (258)**

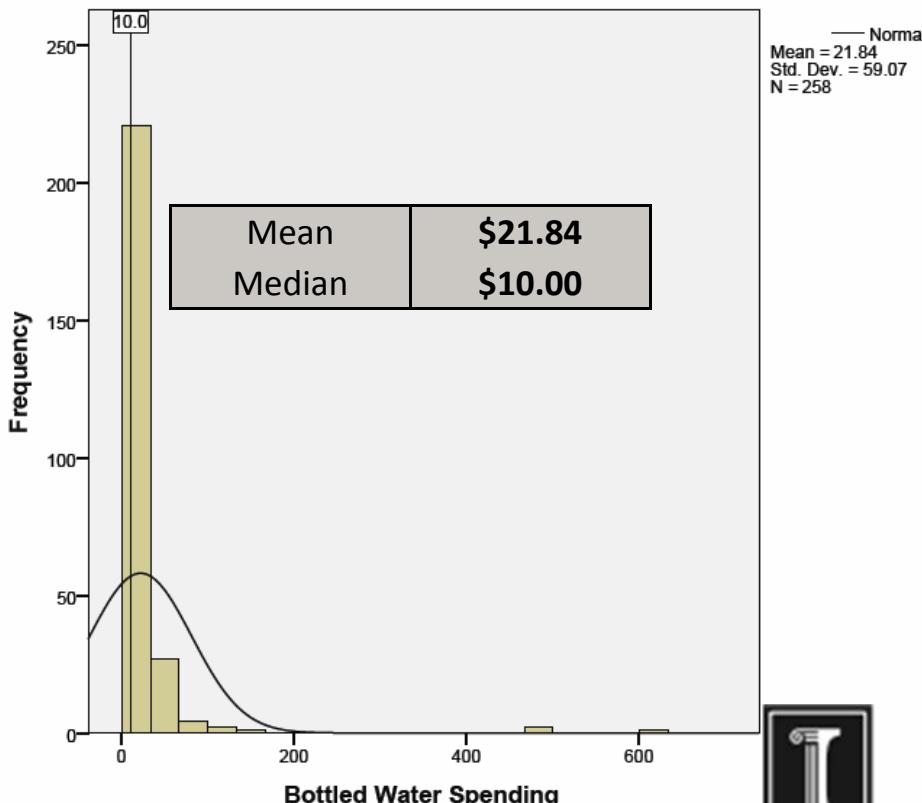
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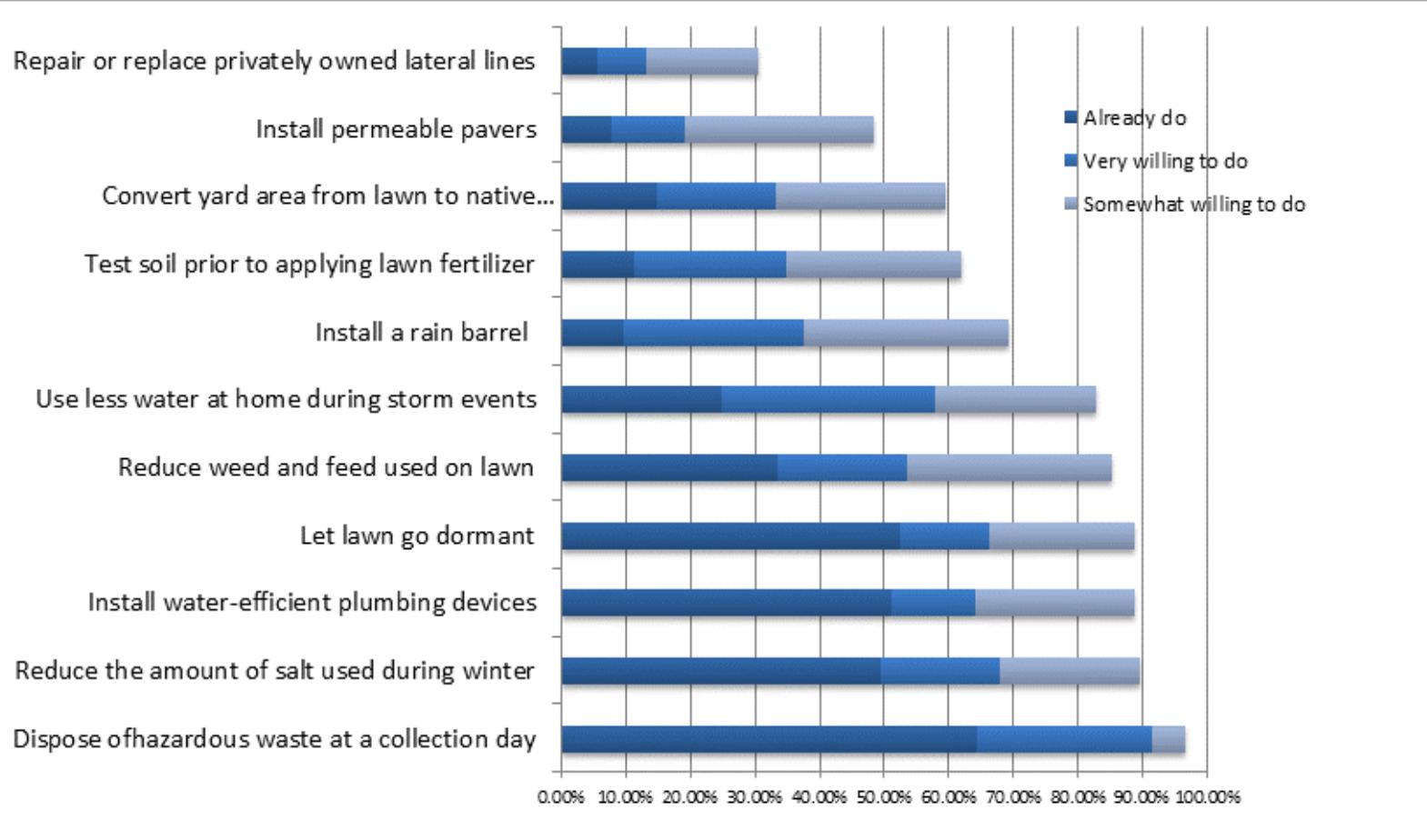
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## How much does your household spend on bottled water each month?

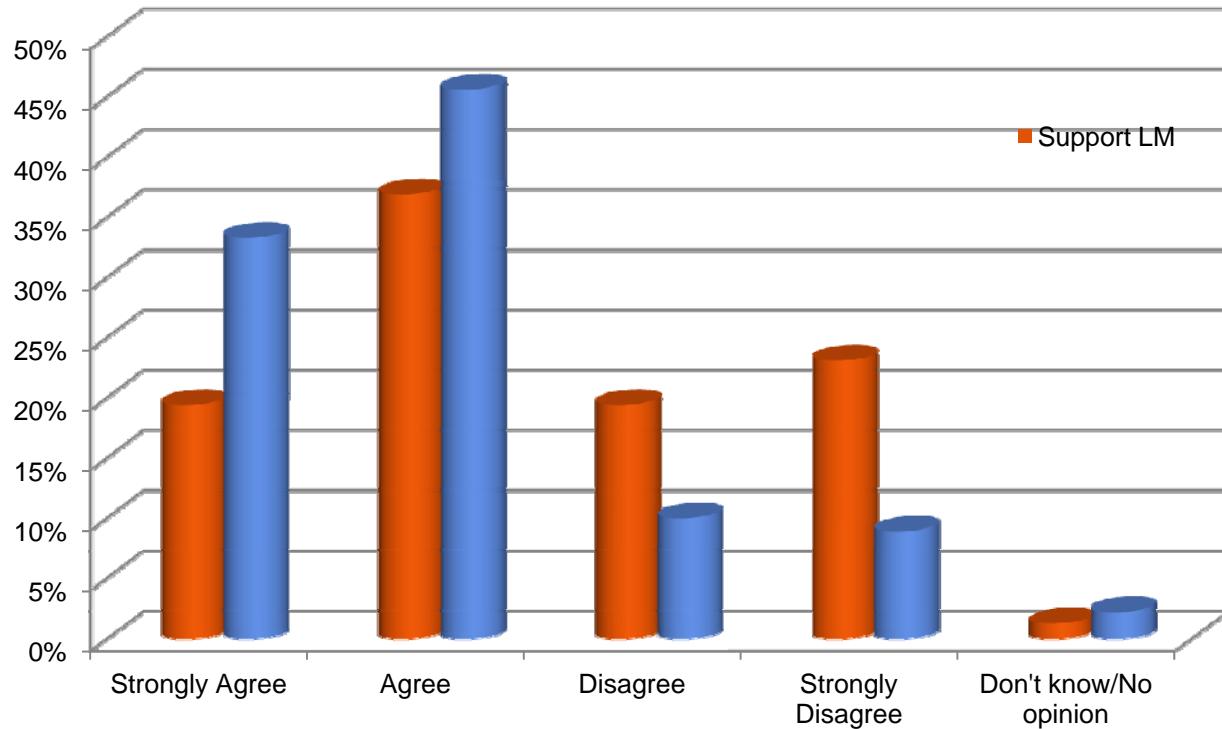


# Community Survey results Future water choices



# Community Survey results Future water choices

## Unfiltered water from the faucet is safe to drink

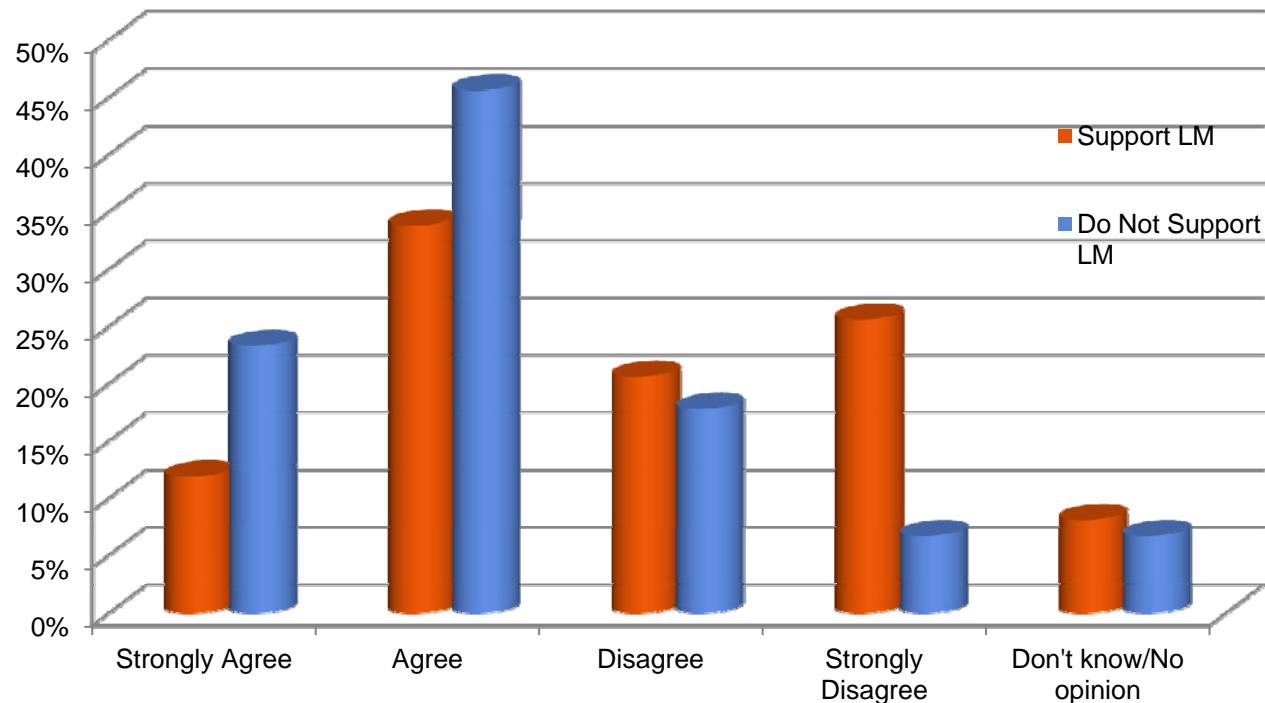


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# Community Survey results Future water choices

I like the taste of unfiltered water that comes directly from the faucet

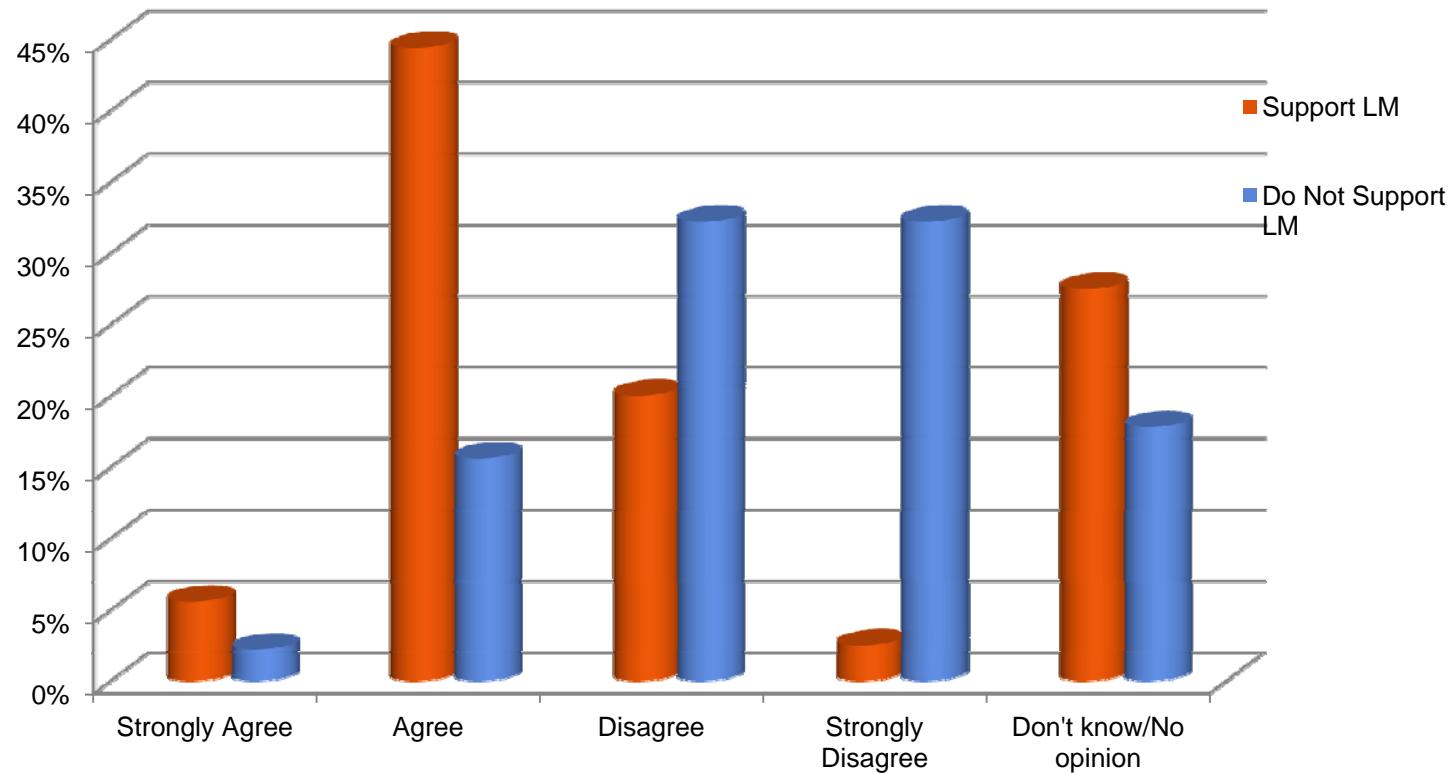


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# Community Survey results Future water choices

There is a possibility of a water shortage in  
Lake Zurich in the near future

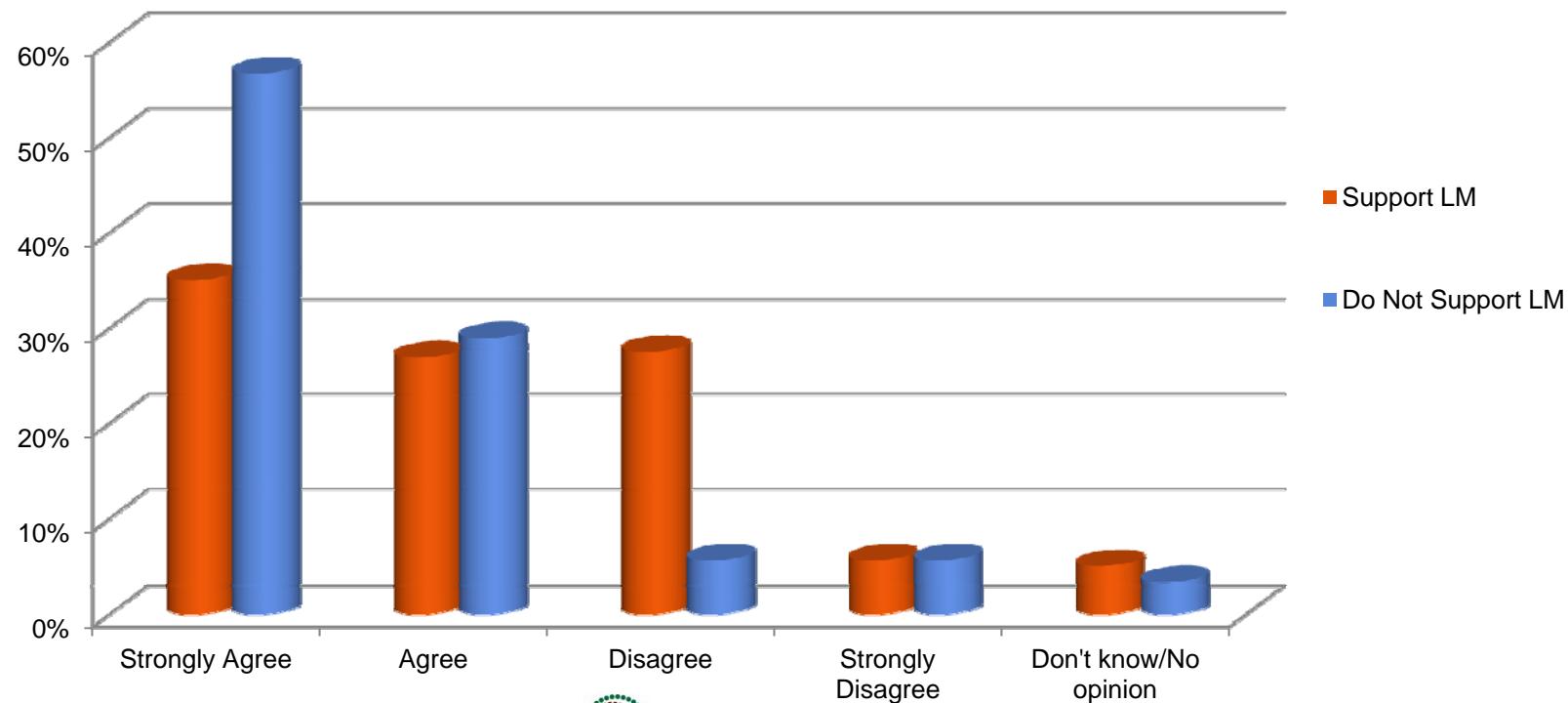


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# Community Survey results Future water choices

**Property tax increases to finance water, wastewater, and storm water related issues should be avoided**

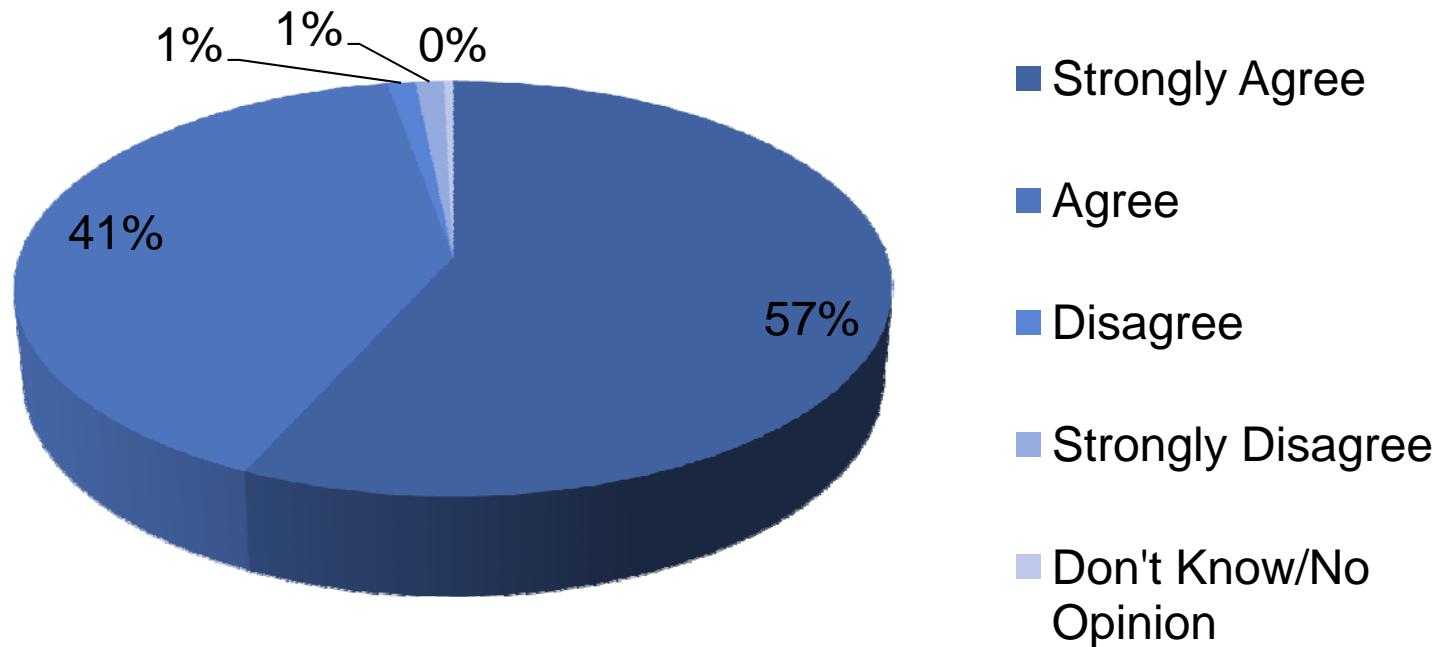


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# Community Survey results Future water choices

## Conserving Water is Important



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# A SNAPSHOT of project team findings



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# Positive things to build on:

- ~~No serious flooding issues, only small and sporadic flooding~~
- No systemic, widespread flooding
- No immediate threat of water supply shortage
- High concentration of industry create opportunities for high-impact green infrastructure, water reuse, etc.
- Existing desire and preliminary plans to redevelop/shape the “new” downtown with green infrastructure
- Water supply infrastructure is mostly new and in good condition
- Water quality meets all required standards
- Public Works staff and Village leadership committed to sustainable water resource management, open to external review
  - i.e., leakage monitoring, advanced metering, monthly billing



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# A few things to improve upon:

- Inflow & Infiltration problem and wastewater peaking
- Perception of flooding issues doesn't match extent of problem
- Existing flooding is highly localized, but severe, predictable, and repeated
- Retention pond maintenance (lack of funding, undefined responsibilities)
- No defined level of service leads to varied understandings about cost of service
- Minimal communication/education by the Village about water, stormwater, and wastewater issues



# Opportunities to take advantage of:

- Interest in industrial reuse of harvested rainwater for irrigation or non-potable uses
- Community survey indicates a willingness of many residents to be a part of solutions
- Existing templates for more informative bills, educational materials, etc.
- Parks Dept. could readily incorporate stormwater management into its property management, partner with wetlands groups, etc.
- Recent government turnover creates chance to articulate a new vision for the future



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# Things to be aware of:

- Increasing frequency of severe weather and precipitation events
- Pending stormwater management regulations (directly affect Lake Zurich) and wastewater management regulations (indirectly affect Lake Zurich)
- Increasing wastewater treatment and radium disposal costs
- Deep aquifer levels are declining
- A shift to Lake Michigan water means giving up some degree of control over costs
- A shift to Lake Michigan water also means incurring additional costs, on top of current debt obligation for past investments



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# Small group discussion and report out

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# What to expect next

- Final task force report will provide recommendations through the language and framework of the Village's Strategic Plan (example below)
  - Strategic Goal 1. Ensure long-term water availability, wastewater stewardship, and sustainable stormwater management.
    - *Design and implement a systematic capital planning process for the performance of water, wastewater, and stormwater-related infrastructure (both gray and green) to meet projected needs of residents, businesses, and ecosystems.*
      - Explanation of what this entails, what information is required, how it should be communicated, etc.



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# What to expect next, cont.

- Strategic Goal 3. Facilitate informed decision making regarding water resources.
  - *Determine what kind of information and analysis is helpful in water resource decision making by individuals, and how best to convey that.*
    - Include templates of bill formats. Explanation of what this entails, why it is significant, etc.



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# What to expect next, cont.

- Presentation of full assessment and recommendations to Village Board on Tuesday, November 21, 7pm
- Final report delivered in December
- Determine which short-term implementation steps are most desirable
- Determine level of Village, MPC, CNT, and CMAP partnership going forward



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# Resources to take advantage of now

- Water 2050 - [www.cmap.illinois.gov/water-2050](http://www.cmap.illinois.gov/water-2050)
- What Our Water's Worth – [www.chicagolandh2o.org](http://www.chicagolandh2o.org)
- Green Values calculator - <http://greenvalues.cnt.org>
- Illinois Green Infrastructure Grant -  
[www.epa.state.il.us/water/financial-assistance/igig.html](http://www.epa.state.il.us/water/financial-assistance/igig.html)
- Illinois Indiana Sea Grant – <http://www.iisgcp.org/>
- WaterSense - [www.epa.gov/WaterSense](http://www.epa.gov/WaterSense)



# Thank you!

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