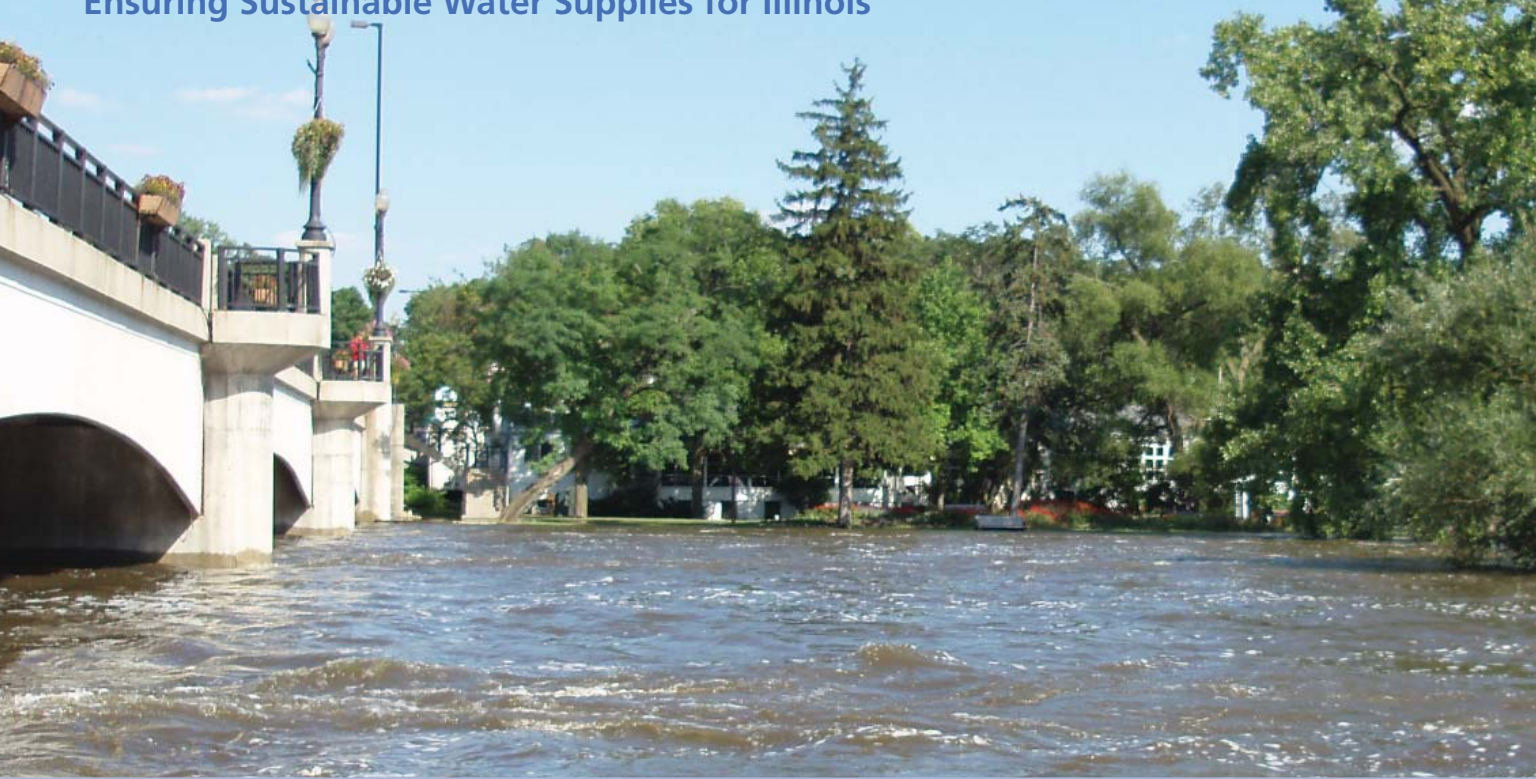


Before the Wells Run Dry

Ensuring Sustainable Water Supplies for Illinois



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The Metropolitan Planning Council and Openlands are deeply indebted to the following individuals, who volunteered their time and substantial expertise as advisors for this report:

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Executive Summary

A sustainable water supply is the lifeblood of thriving communities and regions. Access to clean water is a necessity for equity of opportunity and a high quality of life. Farms and factories require a dependable supply for economic production, while forests and wetlands need it for ecological integrity.

However, Illinois' water supply is challenged on many fronts. The single largest stress on Illinois' shared water resources is population growth. Economic development will fuel increased demand and create pressure on finite water sources. Aging infrastructure and overuse lead to wasteful losses of supply. Waste and inefficient use affect both supply and demand, and, left unchecked, could speed the onset of shortages in some communities.

Water waste is a problem we can solve through local conservation, regional consensus-building and planning, and state financial and technical assistance. Water scarcity is a crisis we must avert.

Precipitated by recommendations from the Metropolitan Planning Council (MPC) and Openlands' 2005 *Troubled Waters*, a 2006 gubernatorial executive order established two pilot regional water supply planning groups. The order also promised the creation of a statewide framework for regional water supply planning to ensure future supplies will be sufficient to support a growing population, our economy, and the ecosystems upon which we rely. This report, the third joint set of recommendations from MPC and Openlands, outlines a framework built on two essential truths:

- **Water supply management is primarily local.** The needs and insights of public (typically municipal) and private water supply managers must continue to inform regional priorities and be reflected in more flexible and responsive state policy. At present, however, local communities often do not have the flexible resources they need to ensure enough water for future population growth, economic productivity, and healthy ecosystems, much less to implement regional strategies.
- **Water supplies are inherently regional.** Rivers, aquifers and pipes cross political borders, while rain falls where it will. The regional level is right for sharing data, setting common goals, and establishing consensus on sustainability strategies that match the scale of the supply in question. Illinois must continue the existing regional planning groups and establish additional groups to cover the remaining geography of the state.

Water waste is a problem we can solve through local conservation, regional consensus-building and planning, and state financial and technical assistance. Water scarcity is a crisis we must avert.

Comprehensive research and forecasting, consensus-driven regional planning, and state support for local plan implementation can help avoid future conflicts and assure water sustainability for Illinois.

Illinois is piloting two regional water supply planning groups — one in 11-county northeastern Illinois and the other in the Mahomet Aquifer region of east-central Illinois. State agencies such as the Ill. State Water Survey (ISWS) have provided invaluable support to those planning processes, and recent state legislation will generate critical annual data on water use. As the initial regional planning cycle (established by the 2006 executive order) nears completion in late 2009, the value of a coordinated statewide framework for regional water supply planning is stronger than ever. However, the mechanisms to ensure implementation of the regional plans and consensus-driven choices remain elusive. The pilot groups and their lead organizations — the Chicago Metropolitan Agency for Planning (CMAP) and Mahomet Aquifer Consortium — have created models for future planning. Additional regional water supply planning groups must be established to cover the remainder of the state. New groups will inherit invaluable lessons from the pilot groups. Ultimately, all regional planning groups will need long-term support from the state and federal levels to encourage and reward communities that implement consensus-driven strategies from the regional plans.

This report recommends coordinated planning and implementation strategies that will capitalize on the work of the pilot regional planning groups, integrate regional plans with state and local practices, and ensure the long-term sustainability and efficient use of our finite, fragile water resources. A bottom-up approach supported by local management of water supplies is necessary to ensure state policies, programs and investments support the regional planning process, and coincide with local support of data-rich and stakeholder-driven regional water supply plans.

Roles in Sustainable Water Supply Management

The 2006 executive order that established the pilot planning groups also called for a new, statewide framework of regional planning to ensure conservation and efficient use of water. Illinois needs to create a process for water supply planning that coordinates responses to what are now fragmented issues (i.e. groundwater vs. surface water, water quality vs. water supply), and responds efficiently to potential water challenges.

The proposed framework below is intended to prevent water scarcity through goal-setting, regional planning, coordination, and incentives.

In particular, continued regional planning in northeastern Illinois is essential to the economic well-being of the region and state. The long-term economic development of the region hinges on consistent and coordinated water resources planning which assures no commu-

Project Background

The Metropolitan Planning Council and Openlands have been vocal, visionary advocates of regional water supply planning as a means to statewide conservation of water resources for several years. This report is the most recent collaboration in this ongoing partnership. Previous activities include:

Changing Course (2003) — Examined the relationship between development practices and water quality and quantity in a 12-county northeastern Illinois region.

Troubled Waters (2005) — Urged the state to establish a statewide framework for regional water supply planning, based on data, integrated management of surface water and groundwater, and inclusion of water demand analysis in land use planning.

“Beyond Sprinklers and Showerheads” (2008) — A day-long conference to examine water supply planning as a conservation mechanism. The white paper prepared by Jack Wittman and Wittman Hydro Planning Associates for the conference was the basis for this paper. Dr. Peter Gleick, president of the Pacific Institute, delivered the keynote address.

nities experience water shortages. It is important to have a forum to equitably resolve water differences and disparities. The Northeastern Illinois Regional Water Supply Planning Group is the most effective and efficient means of ensuring local input, regional consensus, and responsive state financial and technical assistance.

State Role

The appropriate role for the State of Illinois is to facilitate sustainable water supply planning and management in a way that respects the regional nature of water supplies and local nature of water supply management.

- The State of Illinois should continue to support the efforts of existing regional water supply groups as they move from planning into implementation, and in subsequent rounds of planning. The state must dedicate funding to support regional water supply planning, increase the capacity of agencies such as IDNR and ISWS to provide data and technical assistance, and tailor its programs to meet unique local needs.
- By Jan. 1, 2011, the state should establish additional regional water supply planning groups to cover the remaining geography of Illinois. Comprehensive water supply planning needs to include every Illinois community.

The two existing regional planning groups can provide guidance, templates, and significant lessons to new groups, greatly enhancing the efficiency of new efforts.

- Once additional groups have been established, the governor and IDNR should convene a body to act as a water supply planning coordinating council. This non-regulatory, bottom-up coordinating group would provide a forum for local water supply managers and other stakeholders from throughout the state to discuss coordinated action for sustaining limited water supplies. The priorities of local water supply managers must be reflected in state financial and technical assistance, and state programs must respond to and be supportive of local and regional needs.
- This advisory coordinating council would meet on a biannual basis to review the state's financial and technical assistance programs, such as the revolving loan funds managed by IEPA. It also would provide recommendations to the governor, General Assembly, state agencies, individual regional planning groups, and other stakeholders on methods to facilitate implementation of stakeholder-driven regional water supply plans.
- This council would be comprised of representatives from each regional water supply planning group, which include local government officials and other stakeholders. Each regional group would determine its own representatives for the council, making all efforts to represent that region's distinctive water context fairly and equitably. Northeastern Illinois is the population center of the state, and grapples with distinct challenges to several water supply sources. As such, the representative cadre from this region should be proportionally larger than those of other planning groups.

In 2005 — a drought year — Illinois lost an average of 588 million gallons of our allowable Lake Michigan diversion a day as stormwater runoff. We paid to treat every gallon of that runoff as if it were wastewater, and then sent it downstream to the Gulf of Mexico.

588 million gallons is nearly twice the total groundwater northeastern Illinois pulls from aquifers in a day. Inefficient use of our existing resources must be resolved collaboratively.

- IDNR should continue to provide financial and technical assistance to the regional water supply planning groups, and prepare a comprehensive state water supply plan based on the regional plans. This state plan would be submitted to the water supply planning coordinating council for adoption, and identify overarching priorities of state-level concern and corresponding strategies to address them. Additionally, IDNR would continue to manage the Lake Michigan allocation system, with the explicit goal of maximizing the efficient, equitable use of the allocation.
- ISWS and the Ill. State Geological Survey (ISGS) should continue to provide timely research for water supply planning that evaluates and accounts for dynamic factors such as availability of water for population growth, and impacts of drought and climate change. The state should increase funding to ISWS and ISGS to ensure the highest level of comprehensive and timely data.
- IEPA should ensure the guidelines and goals of the revolving loan funds prioritize sustainable water supply management, as well as water quality. Local communities seeking state funding should be rewarded for making investments consistent with regional plan recommendations, cooperating across political boundaries on shared water issues, and simultaneously protecting water quality and supply. IEPA should prioritize sound state funding applications that have been recommended by regional planning groups.
- The state should designate an additional \$3 million a year to fund the work of regional water supply planning groups and additional staff capacity at IDNR, IEPA, ISWS, and ISGS for research and technical assistance. Additionally, the state should designate \$20 million a year to spur implementation of conservation, efficiency, infrastructure modernization, and other consensus-driven strategies from the regional water supply plans. Ensuring a sustainable water supply should be a priority of the State of Illinois. Research, planning and implementation are all equally necessary, and should be recognized as true costs of providing safe, abundant water.
- The state could signal its unequivocal commitment to sustainable local management and regional planning of Illinois' water supplies through an annual appropriation from the General Revenue Fund. However, given enormous pressures on that fund, additional resources may be necessary. In that event, the state should develop equitable, statewide revenue sources that encourage conservation while simultaneously generating funding to dedicate to water supply research, planning and implementation.

Regional Planning Group Role

While water supplies are managed at the local level, planning for supply conservation must be done at the scale of the resource. Regional planning and the resulting stakeholder-driven strategies, to be implemented by local governments or investor-owned utilities, should form the basis of sustainable water resources management in Illinois.

- To complement the work of the two existing pilots, the state should create additional regional water supply planning groups. Each would develop water supply plans with strong local input,



PHOTO: KANE COUNTY



PHOTO: LORI VALUS

and follow IDNR’s guidance on appropriate process and content. These regional plans would form the backbone of a comprehensive state plan.

- Regional planning groups comprised of municipal leadership, county representatives, and stakeholders, with backgrounds in industry, agriculture, and environmental protection, should review local applications for state funding and recognize projects consistent with established regional plans.
- The regional water supply planning groups should take an active role in education, not only on the details of consensus-driven regional plans, but the most current data on supply and demand, conservation and efficiency strategies, and potential impediments to local and regional sustainability practices.

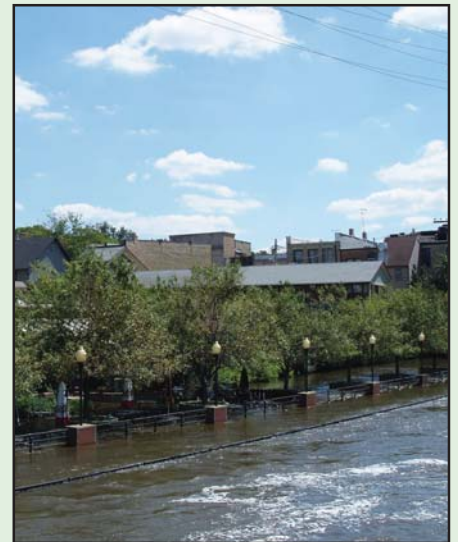
Local Role

- Units of local government should participate in regional planning and implement the resulting data and stakeholder-driven sustainability strategies, including integrating water supply analyses into their land use, zoning and comprehensive plans.
- Communities whose water supply management goals and plans are consistent with regional and state priorities should be rewarded with priority access to state financial resources.
- Municipal and county partnerships that address shared water concerns — such as rapid population growth, depleted water resources, and stormwater runoff — should be encouraged and rewarded by the state. Interjurisdictional, stakeholder-driven strategies, such as those in Kane, Kendall and McHenry counties, would lead to increased cooperation between local units of government, funding opportunities for municipalities, and, most importantly, conservation of shared water resources.

Recommended Strategies and Policy Initiatives

Different communities have different challenges. Many older, more urbanized communities struggle to maintain aging, less efficient water delivery systems. Some rapidly growing communities experience mismatches between the location of new development and availability of existing infrastructure and sufficient water supplies. Historically agricultural communities must balance traditional farming practices with the expansion of residential communities that have different water consumption patterns and needs.

Whatever a community’s specific water circumstances, providing ample supplies for residents, businesses and ecosystems is a fundamental responsibility of good governance. Communities that share water resources — a river, aquifer, or even Lake Michigan and its manmade distribution system — must work together to manage those assets. Solutions must match the scale of the problem. The State of Illinois needs to support regional consensus-building, respond to local needs by rewarding communities for participating in these planning processes, and encourage implementation of resulting conservation and efficiency strategies.



The Fox River, seen here flooding in 2007, is a valuable water supply resource for many communities in northeastern Illinois. Protecting its water quality, as well as ensuring water levels are sufficient to support both wildlife and public consumption, will require a coordinated, watershed-based effort. Coordinated stormwater management can help minimize the likelihood of flooding, reduce property damage, and mitigate contamination. PHOTO: KANE COUNTY

In many ways, Illinois is moving in the right direction. Many communities are reinvesting in existing infrastructure, encouraging residents to use water more efficiently, and working with neighboring municipalities to protect shared resources. Illinois' per capita consumption of Lake Michigan water has dropped in recent years, and total consumption is now below our allowable limits.

However, considerable challenges continue to mount. Northeastern Illinois alone is expected to add 3.3 million people by 2050, with high levels of growth in areas without existing infrastructure to tap the state's allowable diversion of Lake Michigan water. Many communities throughout the state rely on dwindling groundwater and surface water resources, and much of Illinois faces the immediate challenge of costly, wasteful and inefficient use. The State of Illinois provides insufficient financial and technical assistance to communities and regions tackling water supply challenges. Furthermore, the state has not funded the regional water supply planning groups for FY2010 and beyond.

Water supply management is fundamentally a local concern, while water supply planning is inherently regional. The pilot regional water supply planning groups have shown that regional coordination and consensus is possible. Regional planning will need resources that encourage local management of water supplies to align with agreed-upon data, goals and strategies. Moreover, local and regional stakeholders must have regular opportunities to inform state policy and how it supports or hinders their sustainable management of shared water supplies.

MPC and Openlands believe the following strategies and policy initiatives will ensure regional coordination and local action to protect Illinois' finite water supplies as efficiently and effectively as possible: The State of Illinois must consistently provide financial support to regional planning groups, and ensure its investments in technical assistance to local communities are more responsive to local needs and adaptive to varying water supply contexts.

Manage Demand and Rethink Supply

Strategies that help communities manage demand for water, such as conservation pricing, can significantly reduce stress and strain on water supplies and infrastructure, often eliminating or delaying the need to develop of new water supplies or expand infrastructure capacity. Additional supply can be "created" by saving water through conservation strategies such as efficiency upgrades to infrastructure and rate structures that help end users account for the full cost of water delivery. As existing water supplies are further strained, it is essential that we look to alternatives. Techniques such as rainwater harvesting for indoor use in flushing toilets reduces strain on both existing water supplies and infrastructure.

- The State of Illinois and regional planning groups should encourage and support the development of demand management strategies, and provide incentives for municipalities and utilities to implement these systems.
- Strategies such as comprehensive water meter installation,



Land use planning, design guidelines, and zoning codes can affect water supplies positively or negatively. Requirements or incentives for open space preservation, onsite stormwater management, and vegetation standards can help recharge aquifers and reduce strain on public infrastructure. The Prairie Crossing community in Grayslake, Ill., uses many of these strategies.

PHOTO: RICHARD MARINER

plumbing retrofits, and water supply trading should all be permissible and encouraged through the state revolving loans managed by the Ill. Environmental Protection Agency (IEPA).

- The state, regional planning groups, and local units of government should explore and expand strategies to harness rain water, reuse stormwater and treated wastewater, and otherwise expand supply.

Invest in Goal-Oriented Infrastructure

Decades of insufficient reinvestment and modernization — often due to rate structures that were artificially low and did not account for the real cost of water service — have created a backlog of repair needs. Implementing full-cost pricing would help to minimize future infrastructure issues. Substantial federal and state investment is needed to make up for historic shortfalls. There will need to be a period of transition from relying on loans or grants, to establishing efficient rate structures that will meet the cost of sustainable water supply management. In addition, the cost of repaying federal and state loans should be accounted for in water rates. Communities should not have to use unrelated revenue sources to repay those debts. Continuing to depend on infusions of federal and state capital, and then repaying those loans with revenues generated from property or sales taxes, does not encourage efficient use or conservation of finite water sources. Water bills should cover the actual cost of water service.

- To begin to resolve the backlog of needed infrastructure improvements, the State of Illinois, regional planning groups, and local communities should prioritize reinvestment in existing water infrastructure, with the goal of substantially increasing water efficiency. The state should encourage communities and water utilities to conduct comprehensive planning to establish and prioritize capital investment programs according to regional water supply goals.
- Communities need more flexible funding to meet the range of their water concerns; the state revolving loan funds' ranking criteria should explicitly encourage projects that are consistent state goals for water quality and regional strategies for sustainable supply.
- Because the state water revolving loan funds currently require repayment and, typically, a local match, many poorer communities struggle to access these funds. The State of Illinois should explore a new competitive grant program — with rigorous project selection criteria — so that innovative communities or interjurisdictional partnerships can access water funds that clearly advance sustainability goals.

Link Land Use and Water Availability

Land use patterns and water availability significantly impact one another, but this synergy is not always incorporated into policy or land use decisions. While comprehensive plans provide communities with a vision for long-term sustainable growth, zoning and building codes have equally significant influence on water consumption.

- The state should encourage and provide incentives to units of



PHOTO: LORI VALUS



PHOTO: ILLINOIS AMERICAN WATER

local government to create or update comprehensive plans and zoning ordinances informed by current analysis of water supply and demand, and designed to make efficient use of existing water supplies.

- The state also should provide municipal and county partnerships with both incentives and the statutory authority to implement interjurisdictional water management plans should they choose to do so.

Optimize the Lake Michigan Diversion

Northeastern Illinois may be divided by distinct water supplies, but it is united by transportation networks, greenspace corridors, commuter flows, and more. In the eye of the global marketplace, it is a single economic unit. A scenario in which some parts of the region experience water shortages, while other areas waste finite resources, is not a recipe for long-term regional prosperity. The onus is on both current Lake Michigan communities to manage their allocations more efficiently, and current groundwater and surface water communities to conserve dwindling resources. The two are interrelated and should pursue planning together.

Conservation of Lake Michigan water is improving — in 2005 (the most current accounting report), Illinois diverted approximately 85 percent of its allowable total, down from 120 percent in 1993 (see sidebar on page 10). Higher efficiency standards for plumbing fixtures, reductions in stormwater runoff, and repairs to leaks in existing infrastructure all have played a part in reducing per capita consumption. However, with both anticipated population and business growth, as well as the potential for greater and more intense precipitation due to climate change effects, the need to build upon this momentum is clearer than ever. Lake Michigan water is a finite resource, and Illinois cannot continue to take it for granted.

Moving more groundwater-dependent communities onto the Lake Michigan allocation may be necessary, but should not preclude every reasonable effort to increase efficiency of delivery systems, encourage conservation by end users, and protect existing supplies. Illinois' current water infrastructure is already underfunded and insufficiently maintained — adding pumps and extending pipes only will exacerbate that need. However, should it become necessary to significantly expand the Lake Michigan allocation area, doing so will require a coordinated effort by the state, region, and local governments. The City of Aurora, for instance, which currently gets half of its water from the Fox River and half from groundwater, already is exploring the possibility of working through the DuPage Water Commission to receive Lake Michigan water. This blending of supplies likely will be the norm going forward, and will require the same kind of foresight and dialogue with regional neighbors exhibited by Aurora's leadership (see sidebar on page 22).



Illinois' allowable diversion from Lake Michigan is 3,200 cubic feet per second. This does not mean that much is pumped out of the lake for public consumption. Other uses, such as navigation on the Chicago River, require lake water, and any stormwater that falls in the diversion area and does not re-enter the lake counts against the diversion limit. If we want to pump more water in the future, we will need to reduce the amount of water currently diverted for other uses.

PHOTO: TERRY EVANS

A particular concern is, as of 2005, a full 27.7 percent of Illinois' current Lake Michigan diversion is lost as stormwater.¹ Before the reversal of the Chicago River, rain falling in the Lake Michigan diversion area ultimately flowed into the lake. However, the river reversal fundamentally altered the watershed. Now, much of that rain water ultimately flows to the Gulf of Mexico. In 2005, Illinois lost an average of 588 million gallons of our Lake Michigan diversion a day — nearly twice the amount of groundwater northeastern Illinois withdraws from aquifers every day. The percentage of the diversion lost as runoff varies annually with precipitation levels and is influenced by population growth and the amount of impermeable surfaces included in development. If more of that water re-entered the watershed and the lake, or was captured and reused, it would provide ecological benefits, expand our water supply, and reduce strain on existing infrastructure. Instead, it inundates sewer systems, resulting in overflows, release of untreated wastewater, and immense and wasteful consumption of money and energy.

- The State of Illinois, Northeastern Illinois Regional Water Supply Planning Group, and local governments should create policies and practices to reduce stormwater loss from the Lake Michigan diversion by 50 percent by 2020. Doing so will require multiple strategies — consumption of treated stormwater, greater infiltration into the ground, and return of water to the lake. Reduction of stormwater runoff would enable northeastern Illinois to withdraw additional water from Lake Michigan for consumption and assist in recharging lake levels.
- The Chicago Metropolitan Agency for Planning and Northeastern Illinois Regional Water Supply Planning Group should plan, coordinate and oversee a joint effort to reduce stormwater loss from the Lake Michigan diversion and optimize use of the newly available water.
- This plan should guide state, regional and local investment in the Lake Michigan diversion area, with strategies supported by capital investment, financial incentives, and technical assistance.



Metropolitan regions must employ a variety of both hard infrastructure, such as Milwaukee's deep tunnel system, and green infrastructure, such as protected wetlands. Cost-benefit analysis and established goals for water quality, supply and protection of natural resources should drive investment decisions.

PHOTO: TOP, MILWAUKEE METROPOLITAN SEWERAGE DISTRICT, BOTTOM, RICHARD MARINER

¹ Unless otherwise noted, all references to the Lake Michigan diversion are based on U.S. Army Corps of Engineers' *Lake Michigan Diversion Accounting: Water Year 2005 Report*. Further details on Illinois' diversion and allocation can be found in IDNR's 2009 *Lake Michigan Water Availability: White Paper for the NE Illinois Regional Water Supply Planning Group*.

Background Information on Illinois Water Supplies

Lake Michigan Diversion vs. Allocation

Illinois' Lake Michigan diversion and allocation are related concepts, but not the same. Due to the reversed flow of the Chicago River, a defined portion of northeastern Illinois — the diversion area — now loses water that previously would have flowed into Lake Michigan (see map on facing page). A U.S. Supreme Court decision in 1967 set Illinois' diversion at 3,200 cubic feet per second (cfs).

The diversion includes rainfall — stormwater — that would have flowed into one of the region's streams or rivers, then to Lake Michigan. Any stormwater that is captured by the diversion area's sewer systems, gets treated, and is eventually released downstream, counts as water Illinois has taken out of the lake, despite the fact that it was never put to good use.

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. Other components of the diversion include water for navigation on the Chicago River, water that leaks from Lake Michigan into the locks, and of course, water that is pumped out for domestic purposes.

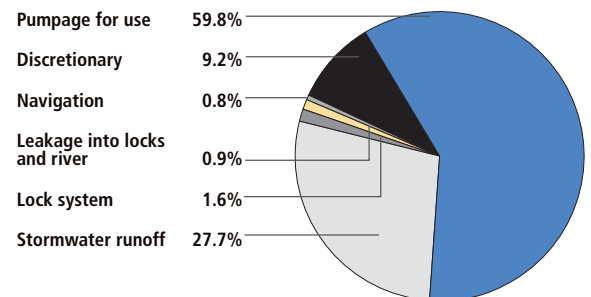
In the 1990s Illinois diverted as much as 120 percent of what is allowed. The decrease in recent years was an intentional effort to repay Illinois' 'water debt' to the Great Lakes. Illinois' use of Lake Michigan water is improving, but more work needs to be done.

Reducing any one component of the diversion, in effect, increases the amount of water that could be used for another purpose or simply left in the lake. The converse also is true. In rainier years than 2005 (a notable drought year), the amount of stormwater increases, so that portion of the diversion grows. With population growth increasing the need for domestic pumpage, and climate change generating more frequent incidents of heavy rain, the ability of the Lake Michigan diversion to serve northeastern Illinois' needs will be tested. It will be essential to eliminate waste and inefficiency.

IDNR is responsible for allocating set amounts of pumped Lake Michigan water to communities in the region. The allocation (service) area is considerably larger than the diversion area, and changes as communities move onto or off of Lake Michigan water. It is, in essence, a network of pipes and pumps. Communities seeking to receive Lake Michigan water must apply to IDNR, prove it is the most economically feasible source of water, and show some evidence of their ability to manage the water responsibly.

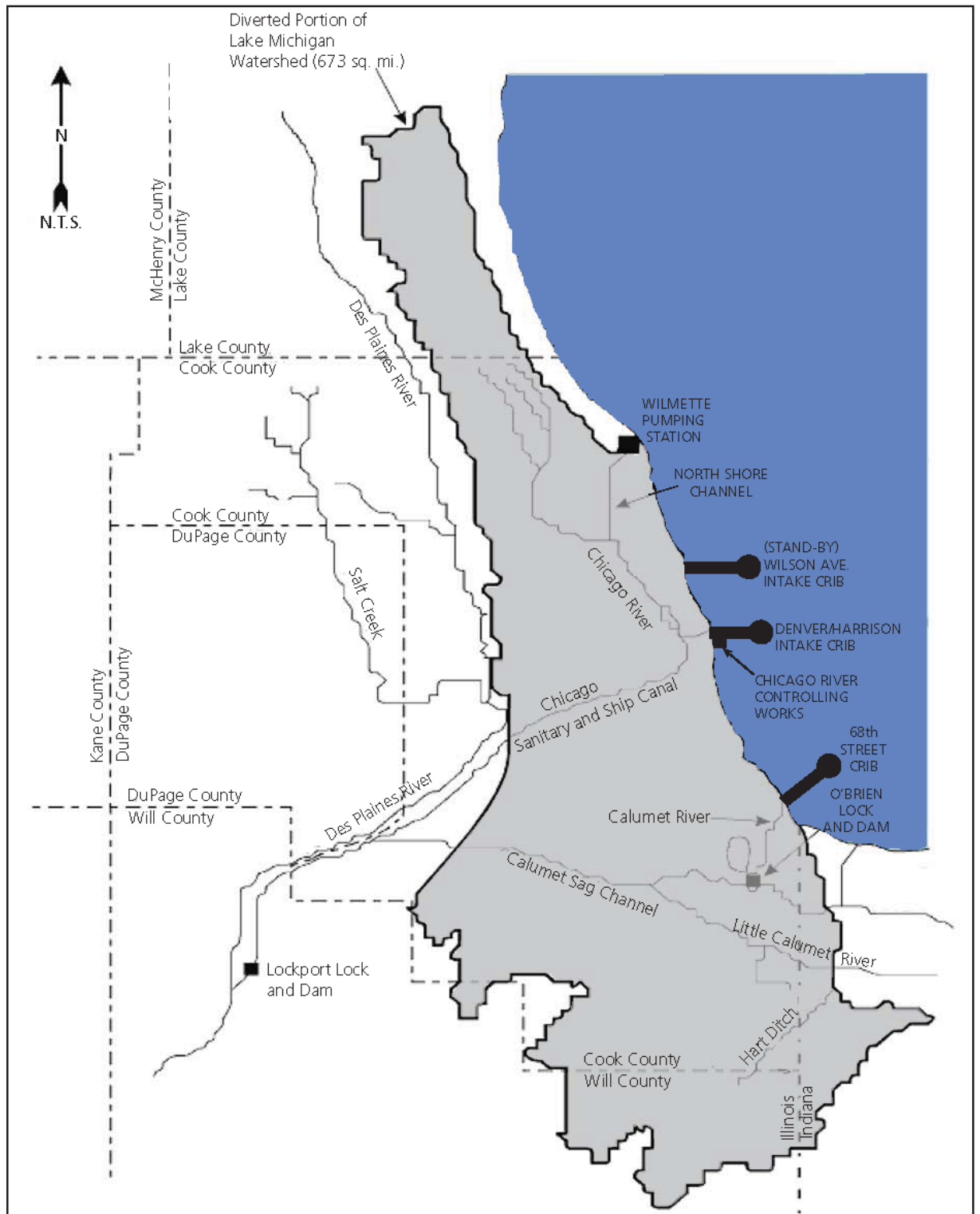
Illinois' diversion is set by federal statute and will not increase in the foreseeable future. Allocation of Lake Michigan water is much more flexible. Illinois is limited to its 3,200 cfs, but a greater portion of that could be used for domestic purposes such as drinking and landscaping irrigation. If measures are taken to reduce other portions of the diversion, more water may become available for future population growth or allocation to communities struggling with groundwater challenges. Given the defined limits of Illinois' diversion, conservation and efficiency of both the total diversion and individual allocations is paramount to long-term regional sustainability.

Breakdown of Illinois' Lake Michigan Diversion, Water Year 2005



SOURCE: U.S. Army Corps of Engineers' *Lake Michigan Diversion Accounting: Water Year 2005 Report*.

Illinois' Lake Michigan Watershed Diversion Area

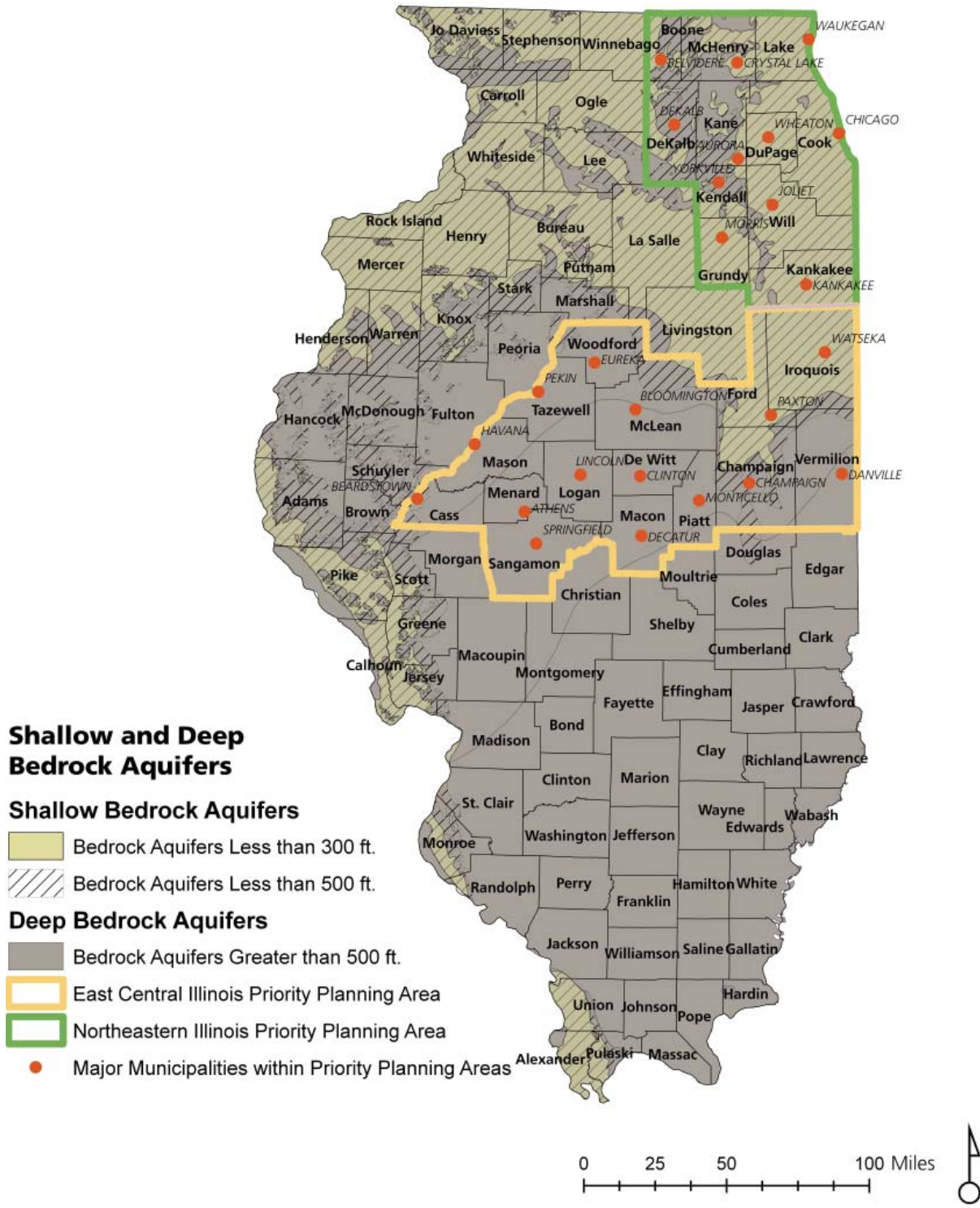


SOURCE: Army Corps of Engineers' *Lake Michigan Diversion Accounting: Water Year 2005 Report*.

Illinois Water Supplies: Shallow and Deep Bedrock Aquifers

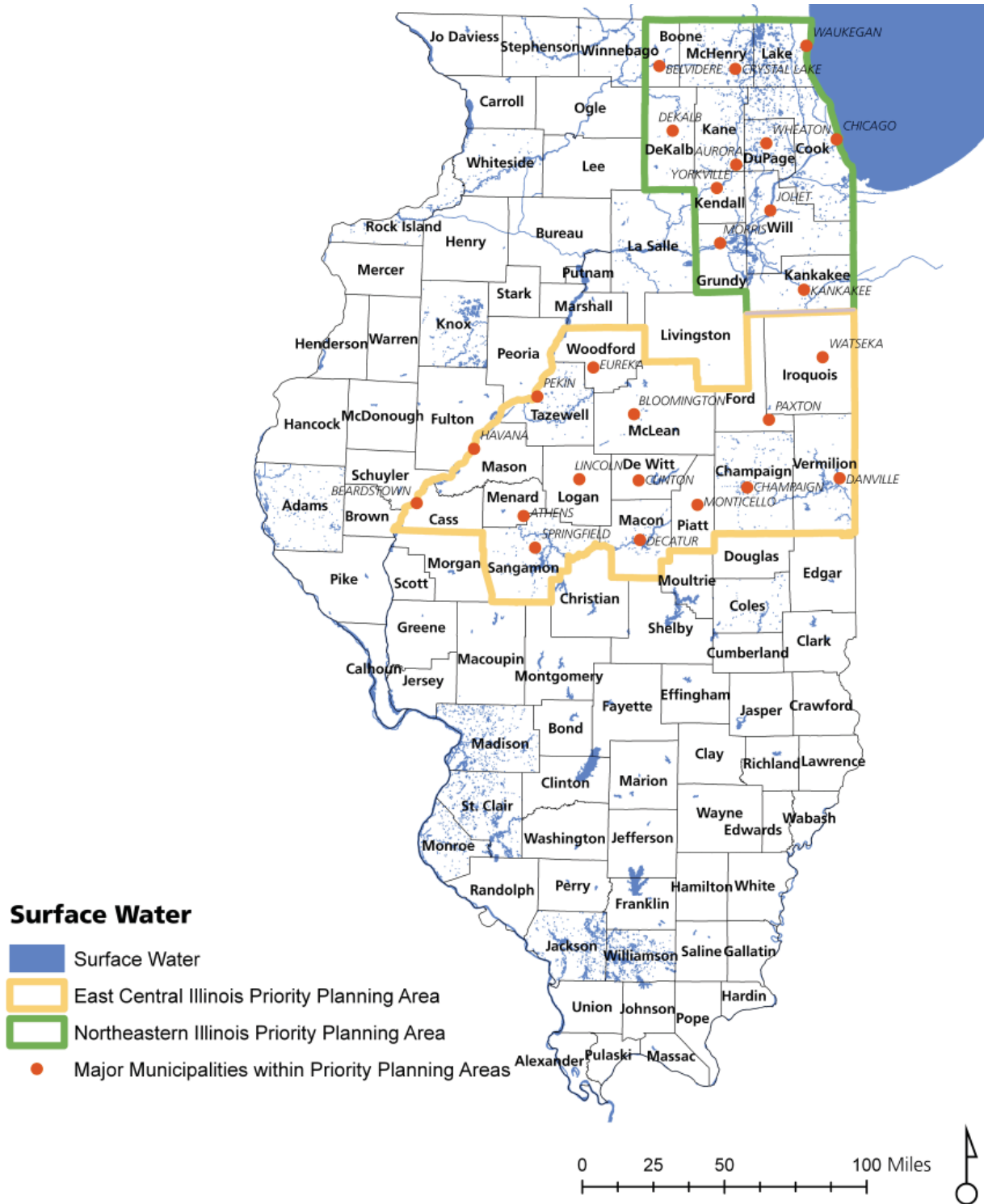
Deep bedrock aquifers lie underneath the entirety of Illinois, at varying depths greater than 500 feet. Most of northern and western Illinois also have access to shallow aquifers. Some areas in northern and western Illinois, such as Henry, Will and Winnebago counties, have access to multiple layers of bedrock aquifers. In contrast, the majority of central, eastern and southern Illinois has access only to the deepest bedrock aquifers. However, not all bedrock aquifers are able to provide quality drinking water equally. In general, the deeper the aquifer, the more likely it is to contain saline water, barium, radium, or other elements that increase treatment costs.

SOURCE: ILLINOIS STATE WATER SURVEY



Illinois Water Supplies: Surface Water

Most areas of Illinois have access to surface water, but not necessarily as a resource for public consumption. Over-consumption of surface water can negatively impact interconnected wetlands and shallow aquifers, harm wildlife, and lead to water quality problems. Moreover, many parts of Illinois rely on hydroelectric power, which requires stable and abundant instream flow to power turbines. Manmade reservoirs, which do not appear on this map, can store surface water and complement other resources, but are costly to build and maintain.

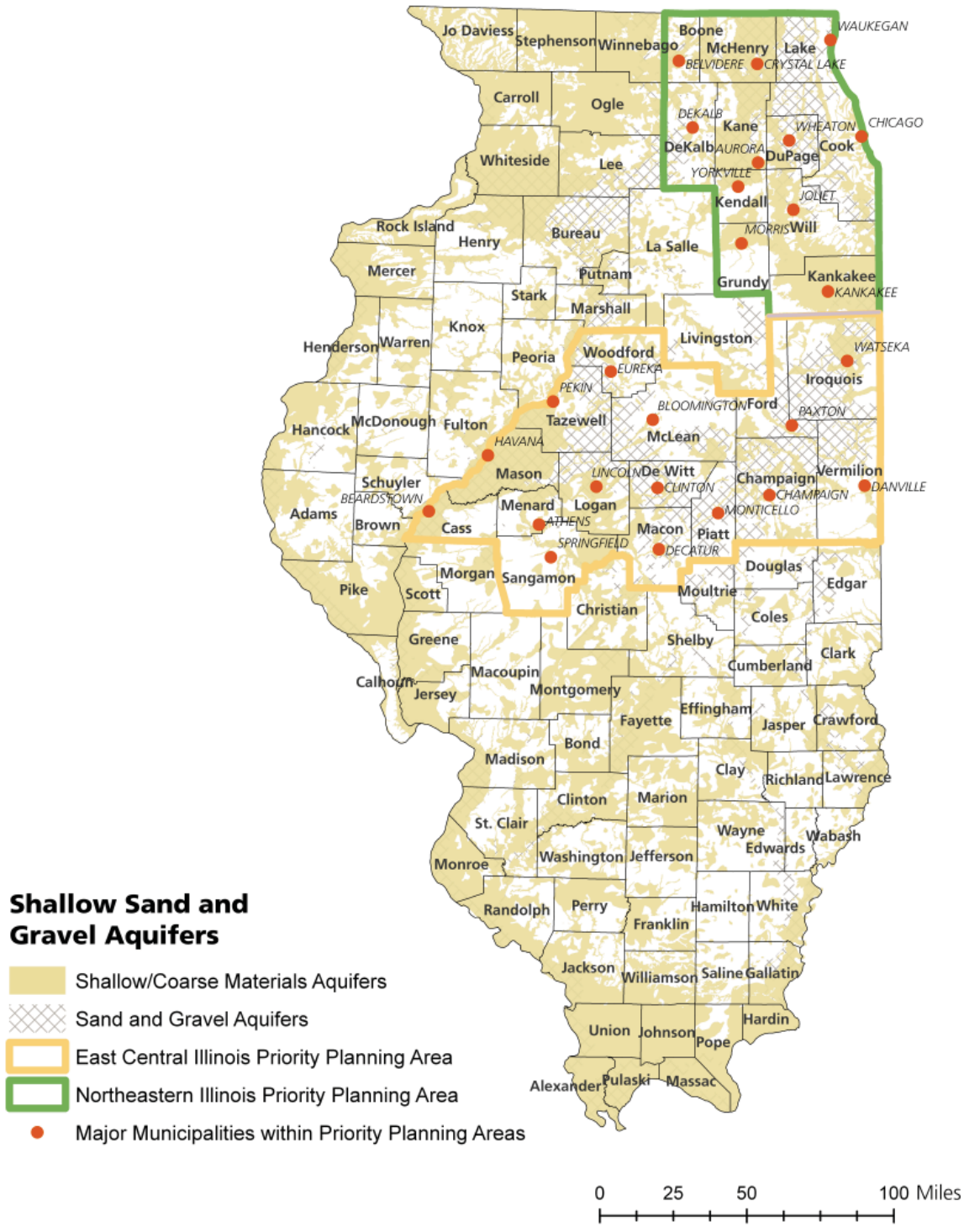


SOURCE: ILLINOIS STATE WATER SURVEY

Illinois Water Supplies: Shallow Sand and Gravel Aquifers

Shallow sand and gravel aquifers recharge faster than bedrock aquifers, but are interconnected with surface water and wetlands, which often exist directly above or proximate to these resources. The interior of Illinois has less access to these shallow resources, putting more pressure on deep bedrock aquifers, manmade reservoirs, and surface water.

SOURCE: ILLINOIS STATE WATER SURVEY



Principles of Water Supply Planning

Illinois' water supply must be efficiently used and conserved to ensure a vibrant economy, healthy ecosystems, and a high quality of life for all. To date, Illinois does not have a state water supply plan based on sound, current, comprehensive data; nor does it have water use and conservation goals for state agencies and other levels of government.

The State of Illinois, regional planning groups, and local units of government should adopt a coordinated and sustainable approach to water resource planning that is:

Conservation-oriented: Making better choices about how we use our current water supply is typically more cost-effective than expanding water supplies. Conservation pricing, infrastructure modernization and repair, efficient building design, and stormwater reuse are conservation strategies that will, help to increase available supply in Illinois.

Regionally-driven and stakeholder-informed: Water use, demand and supply differ throughout the state, so planning must be tailored to the water resources within each hydrologic region. Water resources cross municipal borders, often leading to competition,



Better integration of land use decisions with water supply analysis is essential. Wide swaths of pavement and expansion of public infrastructure will affect water supplies, stormwater management, and government budgets. Illinois must take steps to ensure land use decisions take into account projected water supply and demand to ensure sustainability for future generations.

PHOTO: RICHARD MARINER

redundancy in planning, and inconsistency in conservation measures. Conservation and efficiency plans should be built from the ground up, integrating diverse concerns into stakeholder-driven regional plans that reflect local needs and pursue shared goals.

Proactive and responsive: It is far less expensive to adopt strategies that minimize the likelihood of water shortages and floods than it is to implement reactive solutions in moments of crisis. A regular schedule of planning creates effective water supply programs that adapt and adjust to new conditions and issues on an ongoing basis.

Fact-based: Sound water supply planning and protection requires current, comprehensive data on water consumption and source recharge. Where regional priorities are inconsistent with known science, the State of Illinois should intervene.

State-supported: Water supply planning must be an ongoing process, backed by a predictable stream of funding, and paired with incentive programs and technical assistance to reward and support local communities implementing regional plan strategies.

Consistent with the Great Lakes Compact: Section 4.2 of the Compact requires all states receiving Great Lakes water to create 'Water Conservation and Efficiency Programs.' The state water supply plan, regional plans, and the Compact-required program should be consistent, eliminate redundancy in planning, and prevent potential conflicts.

Integrated with land use planning: Land use patterns differ within and between regions, but the relationship between development and water supply is a constant. Land use policies affect supply and demand for water. As documented in MPC and Openland's 2005 report, *Troubled Waters*, while some counties recognize the need for water supply plans, most local land use plans in Illinois do not evaluate the water demand of proposed land uses. Better integration of water demand in land use planning is an absolute necessity, both to reduce the cost of new infrastructure and ensure future water availability.

Practical: Water supply planning needs to be grounded in specific implementation strategies and mechanisms. The implementation strategy must reflect the nature of the problem, and clearly target established sustainability goals.

Accountable and transparent: Water supply planning at any level — federal, state, regional, local — should be a self-reflective process that includes frequent monitoring and assessment of progress toward established goals. Project selection criteria employed at all levels will ensure public dollars are used to reach defined goals. Ongoing performance measurement will indicate whether water supply management decisions have been successful.

Cited and Additional Resources

Publications

A Plan to Improve the Planning and Management of Water Supplies in East-Central Illinois, Mahomet Aquifer Consortium and the East Central Illinois Regional Water Supply Planning Committee, 2009

A Practical Approach to Water Conservation for Commercial and Industrial Facilities, Senevirante, 2007

Beyond Privatization: Restructuring Water Systems to Improve Performance, Pacific Institute, 2005

Changing Course, Campaign for Sensible Growth, Metropolitan Planning Council, and Openlands, 2003

County-Level Forecasts of Water Use in Illinois: 2005-2025, Southern Illinois University Carbondale, 2005

Handbook for Water Use and Conservation, Vickers, 2001

Lake Michigan Diversion Accounting: Water Year 2005 Report, U.S. Army Corps of Engineers Chicago District, 2005

Lake Michigan Water Availability: White Paper for the NE Illinois Regional Water Supply Planning Group, Ill. Dept. of Natural Resources, 2009

Regional Demand Scenarios for Northeastern Illinois: 2005-2050, Dziegielewski and Chowdhury, 2008

Regional Groundwater Modeling for Water Supply Planning in Northeast Illinois, Ill. State Water Survey, 2009

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Troubled Waters, Campaign for Sensible Growth, Metropolitan Planning Council, and Openlands, 2005

Water Quantity Issues Facing Illinois: A Paper Presented to the 2002 Illinois Environmental Conference of the Illinois State Bar Association, Ill. State Water Survey, 2002

Wet Growth: Should Water Law Control Land Use?, Environmental Law Institute, 2005

Online

Alliance for Water Efficiency

www.allianceforwaterefficiency.org

Located in Chicago, the Alliance serves as a North American advocate for water-efficient products and programs, and provides information and assistance on water conservation efforts.

Center for Neighborhood Technology

www.cnt.org

CNT is a creative think-and-do tank that combines rigorous research with effective solutions. CNT works across disciplines and issues, including transportation and community development, energy, natural resources, and climate change.

Chicago Metropolitan Agency for Planning

www.cmap.illinois.gov

Formed in 2005, CMAP integrates planning for land use and transportation in the seven counties of northeastern Illinois. CMAP's strategy papers for the GoTO2040 regional plan include information on stormwater, wastewater and waterway management.

East Central Illinois Regional Water Supply Planning Committee

www.rwspc.org

This is one of two pilot regional water supply planning groups in Illinois. This web site contains links to all aspects of its planning process, including supply assessments and demand scenarios.

Illinois State Water Survey

www.isws.illinois.edu/wsp

Housed at the University of Illinois at Urbana-Champaign, under the Institute of Natural Resource Sustainability, ISWS is the primary state agency concerned with water and atmospheric resources. This web site provides access to raw data, ISWS reports and analysis, and other information germane to the regional planning process.

Mahomet Aquifer Consortium

www.mahometaquiferconsortium.org

This consortium is concerned with the long-term viability of the Mahomet aquifer in central Illinois, and is the facilitating organization of the East Central Illinois Regional Water Supply Planning Committee.

Metropolitan Planning Council

www.metroplanning.org/water

Since 1934, the Metropolitan Planning Council (MPC) has been dedicated to shaping a more sustainable and prosperous greater Chicago region. As an independent, nonprofit, nonpartisan organization, MPC serves communities and residents by developing, promoting and implementing solutions for sound regional growth.

Northeastern Illinois Regional Water Supply Planning Group

www.cmap.illinois.gov/watersupply/default.aspx

This is one of two pilot regional water supply planning groups in Illinois. This web site contains links to all aspects of their planning process, including all iterations of the draft regional plan, which is scheduled for completion in late 2009.

Openlands

www.openlands.org

Founded in 1963, Openlands protects the natural and open spaces of northeastern Illinois and surrounding region to ensure cleaner air and water, protect natural habitats and wildlife, and help balance and enrich our lives.

WaterSense

www.epa.gov/watersense

Launched in 2006, WaterSense is a partnership sponsored by the U.S. Environmental Protection Agency to promote water-efficient products and practices.

Before the Wells Runs Dry, the third report from the ongoing partnership between MPC and Openlands, lays out a framework for regional water supply planning and sustainable local water supply management throughout Illinois. This report builds upon the success of the two pilot regional water supply planning projects, and presents a series of recommendations for how Illinois can reform existing programs to support regional water supply planning, increase the efficiency of investment in water-related infrastructure, and, ultimately, reward local management that conserves our shared water resources.

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