Water Supply Planning in the Chicago Metropolitan Region

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I. The Legal Context of Water Supply Planning in Illinois

Water supply planning in the Great Lakes basin is influenced by a wide variety of statutes and judicial rulings on both the state and federal level and legal requirements that are both complex and resource-based, differing depending on whether groundwater or surface water resources are being managed. A patchwork of international treaties, interstate compacts, federal statutes, and U.S. Supreme Court decisions all impact the management of Great Lakes water and its use as a water supply resource. State laws also govern surface water and groundwater supply resources outside the basin. Illinois has adopted a reasonable use standard for riparian rights over both surface water and groundwater withdrawals, with common law rights over surface waters having evolved judicially in cases such as *Evans v. Merriweather*, 4 Ill. 400 (1842) and *Bliss v. Kennedy*, 43 Ill. 67 (1867), and congruent rights over groundwater statutorily established under the Illinois Water Rights Act of 1983.[2]

Since Lake Michigan is the region's most important water supply resource, supplying two-thirds of the municipalities and over 80% of the population within the region, the legal issues influencing this water supply resource deserve the greatest attention.[3] The diversion of Lake Michigan water by Illinois has generated considerable litigation over the past century, litigation that has resulted in both contention between and cooperation among the Great Lakes states. The legal framework for allocating Lake Michigan water in northeastern Illinois remains both complicated and controversial since there are very different international, federal, and state mechanisms for controlling who gets how much

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[2] GARY R. CLARK, ILLINOIS DEPARTMENT OF TRANSPORTATION, ILLINOIS GROUNDWATER LAW: THE RULE OF REASONABLE USE (1985, rev. 1988), http://www.isws.uiuc.edu/iswsdocs/wsp/IllinoisGroundwaterLaw.pdf (last visited Apr. 23, 2009).
[3] NORTHEASTERN ILLINOIS PLANNING COMMISSION, STRATEGIC PLAN FOR WATER RESOURCES MANAGEMENT 53 (2002).

water from Lake Michigan. The legal issues arising under each of these institutional mechanisms are briefly discussed below.

A. International Law

The Chicago region's use of Lake Michigan water is only indirectly constrained by international law, especially the Boundary Waters Treaty of 1909.[4] The Boundary Waters Treaty addresses common international border, water quantity, and, since 1972, water quality issues of the Great Lakes. The treaty also created the International Joint Commission (IJC) of Canada and the United States, a six-member commission with three members appointed by each nation.

The IJC has three major responsibilities under the treaty.[5] First is the IJC's limited authority to approve applications for the use, obstruction, or diversion of boundary waters on either side of the border that would affect the natural level or flow on either side. Title III of the 1909 Boundary Waters Treaty, for example, limits the diversion of any Great Lakes waters, except with the agreement of both the country in which the diversion is occurring and the IJC. The IJC's second responsibility is to undertake studies concerning specific problems upon request from the United States or Canada, with implementation at the discretion of the two governments. The IJC's third responsibility is for the Commission, with the approval of both governments, to arbitrate and render final decisions about specific disputes between the nations concerning the boundary waters.

The most recent diversion controversy involving the IJC occurred in 1998 when the Nova Group, a company based in Sault Ste. Marie, Ontario, sought a water withdrawal permit from Ontario in order to market 2.2 million gallons per day (mgd) of bottled Lake Superior water for overseas export to Indonesia. After Great Lakes states and provinces intervened in the IJC process to challenge Ontario's granting of the withdrawal permit on the grounds that it would set a dangerous precedent, the province revoked its permit. In the wake of this international controversy, the IJC commissioned a study team in 1999 to prepare a report to set IJC policy with respect to future diversion proposals.[6]

In its March 2000 report, the study team recommended that the IJC adopt a precautionary principle and not approve any removal of water from the Great Lakes basin unless the proponent can demonstrate that the removal will not endanger the integrity of the Great Lakes ecosystem.[7] In proving that ecological integrity will not be endangered, the proponent

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[4] Treaty Relating to the Boundary Waters and Questions Arising Along the Boundary Between the United States and Canada, U.S.-Gr. Brit (for Canada), Jan. 11, 1909, 36 Stat. 2448.

[5] U.S. Environmental Protection Agency, *The Great Lakes: An Environmental Atlas and Resource Book, The International Joint Commission*, http://www.epa.gov/glnpo/atlas/glat-ch5.html#International%20Joint%20Commission (last visited June 9, 2009).

[6] INTERNATIONAL JOINT COMMISSION, THE PROTECTION OF THE WATERS OF THE GREAT LAKES: FINAL REPORT TO THE GOVERNMENTS OF CANADA AND THE UNITED STATES (March, 2000), *available at* http://www.ijc.org/php/publications/html/finalreport.html (last visited June 9, 2009).

[7] The IJC's focus on protecting the Great Lake's ecological integrity seems well warranted, given the international free trade implications of many of these water diversion proposals. The IJC Final Report notes that the North American Free Trade Agreement (NAFTA), the Canada-U.S. Free Trade Agreement (FTA), and the World Trade Organization (WTO) all incorporate similar General

would have to show that: (1) there were no practical alternatives to the removal; (2) sound planning was applied; (3) cumulative impacts were considered; (4) conservation practices were implemented; (5) removal would result in no net loss of waters to the area from which it is taken (and in no event may a loss exceed the basin's current 5% average loss); and (6) waters are returned in a condition that protects its quality and prevents the introduction of alien invasive species into the Great Lakes.[8] Moreover, the report recommended that, to protect the ecological integrity of the basin, governments should not approve any new proposal for a major new or increased consumptive use of Great Lakes water unless full consideration is given to cumulative impacts, conservation measures, and planning, and that all waters returned meet the objectives of the Great Lakes Water Quality Agreement.

B. Federal Law

Since Lake Michigan lies solely within U.S. borders and is, therefore, technically not a "boundary water" under the 1909 Boundary Waters Treaty, Lake Michigan was treated as a boundary water only for some purposes, such as to protect free navigation under Title III of the treaty or to protect water quality under the later 1972 Water Quality Agreement. However, it was unclear, in the absence of such explicit grants of jurisdiction, exactly how IJC's authority would be exercised over those portions of the Great Lakes basin lying solely within U.S. territory.

To resolve this jurisdictional issue, the Great Lakes states passed their own state laws requiring state approval for water withdrawals and, in the mid-1950s, the states also collectively supported the creation of a compact for the Great Lakes. In 1968, Congress finally approved the interstate agreement, effectuating the Great Lakes Basin Compact and creating the Great Lakes Commission.[9] This Compact gave the Great Lakes Commission the responsibility to conduct research and to develop cooperative plans for the orderly, integrated, and comprehensive development, use, and conservation of the Great Lakes basin's water resources. The Commission's charter, however, gave the Commission no authority to directly manage or regulate water use in the basin.

This lack of regulatory oversight became problematic after the U.S. Supreme Court ruled in *Sporhase v. Nebraska* that water was a commodity in interstate commerce, and thus state

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Agreement on Trade and Tariffs (GATT) principles. The IJC took the position that Great Lakes water, in its natural state, is not a product or good subject to these treaties, and only becomes a commodity subject to U.S. and Canadian obligations under NAFTA, FTA, and WTO when it is captured and enters into commerce. In adopting a precautionary principle based on the need to protect the basin's ecological integrity, the IJC might be able to justify its policy of disallowing any new or expanded consumptive uses of Great Lakes water as a Sanitary and Phytosanitary measure authorized under Article XX of GATT and § 2101 of NAFTA. Ecological integrity has therefore emerged as the central strategy to circumvent free trade treaties that would otherwise mandate member nations treat any diversion or bulk exports of their Great Lakes water as a trade commodity. *See* COUNCIL OF GREAT LAKES GOVERNORS, GREAT LAKES COMPACT ANNEX 2001 (2001), *available at* http://www.cglg.org/projects/water/docs/GreatLakesCharterAnnex.pdf (last visited Apr. 16, 2009).

[8] IJC Final Report, *supra* note 6, at Recommendation I: Removals.

[9] An Act Granting the Consent of Congress to a Great Lakes Basin Compact, and for other purposes, Pub. L. No. 90-419, 82 Stat. 414.

bans on water exports were subject to federal preemption.[10] Moreover, the *Sporhase* decision implied that states might not have the power to prohibit interstate water transfers, either cooperatively or individually, other than for the legitimate police power purposes of water conservation or water resource preservation. After several diversion proposals surfaced in the early 1980s, such as a 1981 proposal for using Great Lakes water for a coal-slurry pipeline running from Lake Superior to Gillette, Wyoming and the U.S. Army Corps of Engineers' 1982 study of using Great Lakes water to mitigate the Ogallala Aquifer's depletion, the Great Lakes governors became concerned that they might be unable to legally prohibit or "embargo" any large-scale diversion or transfer of Great Lakes water out of the basin.[11]

In the wake of the *Sporhase* ruling, the Council of Great Lakes Governors (CGLG), a non-profit organization created in 1982 as the successor to the Upper Great Lakes Regional Commission, issued a report in 1985 entitled "Final Report and Recommendation of the Great Lakes Governors Task Force on Water Diversion and Great Lakes Institutions." The CGLG's report identified major weaknesses in the existing regional institutions that governed the Great Lakes, the IJC, and the Great Lakes Commission. The regional framework limitations included the Great Lakes Commission's functioning only as "an advisory organization without substantive regulatory power, while the International Joint Commission's authority over diversions did not cover Lake Michigan (because it is contained solely within U.S. territory) and was dependent on a national government referral process before its authority to approve or disapprove diversions could be asserted."[12]

Appendix III of the CGLG Task Force's final report was entitled, "The Great Lakes Charter: Principles for the Management of Great Lakes Water Resources." The Charter sets forth five management principles: (1) treating the Great Lakes basin as a unified natural resource and ecosystem; (2) cooperative management by the states and provinces; (3) disallowing diversions "if they would have any significant adverse impacts on lake levels, in-basin uses and the Great Lakes Ecosystem;" (4) "no state or provincial approval of any permits for new or increased diversion without notifying, consulting with, and seeking the consent and concurrence of all affected Greate [sic] Lakes States and Provinces;" and (5) creation of a Water Resources Management Committee charged with collecting and sharing of information about the Great Lakes.[13]

Congress subsequently incorporated the CGLG's five principles into § 1109 of the federal Water Resources Development Act (WRDA) of 1986.[14] Section 1142 of WRDA also granted authority to the U.S. Army Corps of Engineers (Corps) to measure and compute the amount of Lake Michigan water diverted by the State of Illinois. By incorporating the Charter

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[10] 458 U.S. 941, 953-54 (1982).

[11] These earlier diversion controversies were surveyed in *IJC Final Report*, *supra* note 6, at Appendix V.

[12] James P. Hill, *The Great Lakes Quasi Compact: An Emerging Paradigm for Regional Governance of U.S. Water Resources?,* 1 DETROIT COLL. OF L. REV. 1, 12 (1989).

[13] COUNCIL OF GREAT LAKES GOVERNORS, THE GREAT LAKES CHARTER: PRINCIPLES FOR THE MANAGEMENT OF GREAT LAKES WATER RESOURCES 2-3 (1985), *available at* http://www.cglg.org/projects/water/docs/GreatLakesCharter.pdf (last visited June 9, 2009).

[14] Pub. L. No. 99-662, 100 Stat. 4082 (codified at 42 U.S.C. § 1962(d)-20).

principles directly into federal legislation, a "quasi-compact" was created, which had "all of the advantages of the federally approved interstate compact without the long delays and Congressional restrictions that otherwise have hampered the effectiveness of many of the previously approved compacts."[15]

By adopting the Charter, the Great Lakes governors independently resolved to review any diversion and consumptive uses from any of the Great Lakes by establishing a notice, consultation and consent process for all diversions.[16] One significant loophole existed in the quasi-compact, however: § 1109(f) of WRDA expressly stated: "This section shall not apply to any diversion of water from any of the Great Lakes which is authorized on the date of the enactment of this Act." This statutory exception explicitly excluded the Chicago diversion from the Great Lake Charter's gubernatorial oversight and veto authority.[17]

The IJC raised an equally significant problem with the CGLG's "quasi-compact" in its Final Report. In addition to raising concerns of commerce clause challenges to state legislation that blocks the flow of goods across state lines (and water, since *Sporhase*, is a good in interstate commerce), the IJC noted a substantial legal problem arising within the quasi-compact's review process. Neither the Charter nor § 1109 of WRDA contain any standards by which to guide gubernatorial discretion in approving or vetoing a proposed diversion, and thus the legislation could be legally challenged as an improper delegation of congressional authority to the states. Despite the lack of decisional criteria, the CGLG formally created a review process in 1987 to implement WRDA's Prior Notice and Consultation (PNC) process.[18] In its Final Report, the IJC noted that, by established mandatory withdrawal triggers for review and by imposing monitoring requirements on the states, the PNC process would hopefully establish sufficient information with respect to specific regulatory decisions to possibly finesse the improper delegation issue.[19]

The review procedures created by the Great Lakes Charter were further clarified when Congress amended WRDA in 2000. Section 504 of the Water Resources Development Act of 2000 amended § 1109(d) by adding a new paragraph to "encourage the Great Lakes States . . . in consultation with Ontario and Quebec . . . to develop and implement a mechanism that provides a common conservation standard embodying the principles of water conservation and resource improvement for making decisions concerning the withdrawal and use of water from the Great Lakes Basin."[20] The amendments also explicitly added water "exports" to the PNC provisions and affirmed the sense of Congress that the U.S. Secretary of State should work with Canada to encourage its provinces to adopt a similar mechanism and consistent standards to govern the withdrawal and use of Great Lakes water.[21]

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[15] Hill, *supra* note 12, at 20.
[16] Peter MacAvoy, *The Great Lakes Charter: Toward a Basinwide Strategy for Managing the Great Lakes,* 18 CASE W. RESERVE J. OF INT'L L. 49, 55 (1986).
[17] Hill, *supra* note 12.
[18] COUNCIL OF GREAT LAKES GOVERNORS, MANAGING THE WATERS OF THE GREAT LAKES BASIN (Feb. 1987).
[19] IJC Final Report, *supra* note 6, at 32.
[20] Pub. L. No. 106-541, § 504(a)(2) (codified at 42 U.S.C. § 1962d-20(b)(2)).
[21] *Id.* § 504(c).

The "mechanism" the CGLG employed to comply with this Congressional "encouragement" was the Great Lakes Charter Annex of 2001, which was signed by the eight Great Lakes governors and the premiers of Quebec and Ontario on June 18, 2001.[22] The 2001 Annex was a supplemental voluntary agreement to update the 1985 Great Lakes Charter to provide more specific decisional criteria under the 1986 WRDA's PNC provisions. Annex 2001 contained a set of findings, a purpose statement, six directives, an implementing provision, and a set of definitions.

In the Findings section of the Annex, the CGLG noted that the Great Lakes were "held in trust by the Great Lakes States and Provinces" (language that clearly invites judicial consideration of the public trust doctrine) and that "protecting, conserving, restoring, and improving the Great Lakes is the foundation for the legal standard upon which decisions concerning water resource management should be based."[23] In the Purposes section, the Governors and Premiers reaffirmed their commitment to the Charter principles and also "commit to develop and implement a new common, resource-based conservation standard and apply it to proposed new or added increased capacity withdrawals of Great Lakes water."[24]

The Annex's six directives formed the basis for common state legislation introduced by the Governors in each of the Great Lakes states. In an impressive legislative achievement, by 2005, each of the eight legislatures of the Great Lakes states had ratified the CGLG's proposed new compact, which was respectively signed into law by each of the governors. Congress approved, and President Bush signed, the Great Lakes and St. Lawrence River Basin Water Resources Management Compact in 2008. The Compact implemented the Annex 2001 agreement by establishing both state and regional review processes triggered by different scales of both individual and cumulative withdrawals and requiring the adoption of water conservation and return flow improvements within the Great Lakes basin. To enable the CGLG to create an adaptive management strategy for better managing withdrawals from the basin, the Compact required the collection and exchange of water resource and water use information between the states. Sections 10-14 of the Compact, however, still largely exempt the State of Illinois from the Compact's collective gubernatorial oversight, as the Chicago diversion remains governed by the U.S. Supreme Court decrees in *Wisconsin v. Illinois*.

C. Supreme Court Rulings

There has been almost a century of litigation before the U.S. Supreme Court concerning the diversion of Lake Michigan water to the Mississippi River basin by Chicago. This prolonged litigation can be traced to the creation of the Illinois and Michigan Canal project in 1827 and the opening of the canal to shipping in 1848.[25] Major storms in 1885 caused the release of raw sewage into Lake Michigan, contaminating the city's water supply and causing an outbreak of typhus that killed more than 90,000 people, 12% of Chicago's population at the

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[22] COUNCIL OF GREAT LAKES GOVERNORS, THE GREAT LAKES CHARTER ANNEX: A SUPPLEMENTARY AGREEMENT TO THE GREAT LAKES CHARTER (June 2001), *available at* http://www.cglg.org/projects/water/docs/GreatLakesCharterAnnex.pdf (last visited June 9, 2009).

[23] *Id.* at 1.

[24] *Id.*

[25] *See* Bruce Barker, *Lake Diversion at Chicago*, 18 CASE W. RESERVE J. OF INT'L L. 203 (1986).

time. After the spill, the Sanitary District of Chicago was created and immediately began a project to reverse the flow of the Chicago and Calumet Rivers so that sewage would flow away from the city's water supply intakes in Lake Michigan.[26] Sewage would be diluted and flushed through a new, larger Chicago Ship and Sanitary Canal (CSSC) that replaced the old Illinois and Michigan Canal. The new sewage works project was designed to support a flow of 10,000 cubic feet per second (cfs) and would allow Chicago's diluted sewage to flow via the Des Plaines River into the Illinois River, which discharges into the Mississippi River.

Since the reversal of the Chicago River and the completion of the CSSC in 1900, water withdrawn from Lake Michigan by northeastern Illinois communities for domestic use, navigational purposes, and the dilution of sewage treatment plant wastewater discharges is diverted by the Illinois Waterway[27] out of Lake Michigan's watershed and into the Mississippi River's watershed. The sewage dilution project received a permit from the Corps in 1899. Although the Sanitary District designed the project for a 10,000 cfs flow, the permit set the limit on the flow of water through the Chicago River at 4,167 cfs.

Even with this diversion limit, the CSSC almost immediately sparked litigation when it became operational in 1900. After an epidemic of typhus broke out a few years after the diversions started, the city of St. Louis filed suit in *Missouri v. Illinois*[28] to stop Chicago's sewage discharge to the Mississippi River, claiming that the sewage threatened that city's public health. The Court ruled in favor of Illinois, finding that Missouri failed to show that its disease outbreak was attributable solely to Chicago's sewage discharges. The abatement of the Chicago Sanitary District's project as a public nuisance was thus not warranted.

The Corps continued to limit the total water diversion to 4,167 cfs even after the Calumet-Sag Channel, the navigation channel linking the Little Calumet River with the CSSC, was completed, over concerns raised by the other Great Lakes states that a larger diversion might lower Lake Michigan's water levels. The U.S. Supreme Court upheld the Corps' authority to limit the diversion flow, finding, in *Sanitary District of Chicago v. United States,* that federal consent was required if Great Lakes navigation would be threatened by lowered lake levels.[29]

In the wake of this ruling in 1925, the Great Lakes states of Wisconsin, Minnesota, Ohio, Pennsylvania, Michigan, and New York sued to stop Illinois' diversion of 8,500 cfs of water from Lake Michigan, while the states of Missouri, Kentucky, Tennessee, Louisiana, Arkansas, and Mississippi joined Illinois in supporting the project. In 1929, the Supreme Court ruled that the diversion was illegal on the grounds that, even if the Corps permit was issued for a legitimate navigational purpose, Congress had never directly authorized the

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[26] Daniel Injerd, *Lake Michigan Water Diversion: A Case Study*, 1 BUFFALO ENVTL. L.J. 307, 307 (1993).

[27] The Illinois Waterway is a system of rivers and canals linking Chicago and Lake Michigan to the Mississippi River.

[28] 200 U.S. 496 (1906).

[29] 266 U.S. 405, 429 (1925).

CSSC.[30] A second decree issued by the Court in the case a year later ordered a phase-out of the illegal diversion and also ordered the Corps to issue a permit implementing its decree.[31]

Congressional action eventually resolved this legal controversy. Illinois was able to get Congress to pass a law in 1930 authorizing the Illinois Waterway, transferring authority for navigational management to the Corps (thereby federalizing the Illinois Waterway) and also authorizing a diversion of 3,200 cfs for navigational purposes on the CSSC, if the locks and dams below the city of Utica on the Illinois and Mississippi Rivers were improved.[32] That same year, the Court, in *Wisconsin v. Illinois*, decreed that the Chicago River locks and other diversion control works be built and new sewage treatment plants constructed, to enable Illinois to reduce its diversion to 1,500 cfs plus domestic pumpage (a total of 3,200 cfs) by January 1, 1938.[33] This 3,200 cfs limit on Illinois' diversion, first imposed by the Court in its 1930 decree, remains in effect to this day.

In 1956, the Court modified its 1930 decree in *Wisconsin v. Illinois* to authorize a temporary increase in the diversion from 1,500 cfs to 8,500 cfs to address low flow levels on the Illinois and Mississippi Waterways as the result of a drought.[34] In 1958, new lawsuits were filed by the Great Lakes states, requesting that the Court again reopen *Wisconsin v. Illinois* to force Illinois to return treated sewage effluents into Lake Michigan. Although a special master's report concluded that the 1930 statute authorizing the Illinois Waterway made the diversion lawful, legal action by the other Great Lakes states proved more successful in 1967 when the U.S. Supreme Court re-opened its *Wisconsin v. Illinois* decree.[35] The 1967 modification "forced the State of Illinois to assume direct and continuing responsibilities in managing the lake diversion."[36] While again placing an absolute limit of 3,200 cfs on the diversion (using a five-year running average), the 1967 decree also gave Illinois the discretion to determine how this limit would be allocated.

In 1980, the U.S. Supreme Court again modified its decree in *Wisconsin v. Illinois*, this time at the request of Illinois.[37] Illinois wanted to expand Lake Michigan water service into DuPage County in Chicago's western suburbs. Although the Court refrained from modifying that portion of its 1967 decree which prohibited "diverting any of the waters of Lake Michigan or its watershed . . . in excess of . . . 3,200 cubic feet per second" annually over a forty year averaging period,[38] the Court did make some changes. The 1980 modification clarified the state's water accounting procedures, recognized the state's most recent allocation order, and limited the diversion's sewage dilution component to 320 cfs. In addition to setting restrictions on the maximum allowable diversion in any single year, the 1980 Decree also established a "water bank" with a debt limit that cannot exceed 2,000 cfs-year.

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[30] Wisconsin v. Illinois, 278 U.S. 367 (1929).
[31] Wisconsin v. Illinois, 281 U.S. 179 (1930).
[32] Act of July 3, 1930 (authorizing the construction, repair, and preservation of certain public works on rivers and harbors), 46 Stat. 918.
[33] Wisconsin v. Illinois, 289 U.S. 395 (1933).
[34] Wisconsin v. Illinois, 352 U.S. 984 (1956).
[35] Wisconsin v. Illinois, 388 U.S. 426 (1967).
[36] Barker, *supra* note 25, at 213.
[37] Wisconsin v. Illinois, 449 U.S. 48 (1980).
[38] Wisconsin v. Illinois, 388 U.S. 426, 427 (1967).

D. The 1996 Great Lakes Mediation Memorandum of Understanding

For fourteen of the sixteen years following the issuance of the 1980 Decree, Illinois exceeded the 3,200 cfs diversion limit. Although the state exceeded its 2,000 cfs per year debt limit in 1988, the Corps did not notify the other Great Lakes states of this violation until 1994. From 1983 to 1996, the certified running average for the diversion was 3,456 cfs, while the cumulative deviation from the decree limit rose to 3,493 cfs. After being notified by the Corp in 1994, the other Great Lakes states announced their intention to sue Illinois for violating the 3,200 cfs limit.

Following a lengthy federal mediation process, the eight Great Lakes governors signed the Great Lakes Mediation Memorandum of Understanding (MOU) in July 1996. In the MOU, Illinois again agreed to limit its withdrawals to the 3,200 cfs limit set forth in the Supreme Court's decrees, but also agreed to further limit its diversions over the final twenty-four years of the 1980 decree's forty-year averaging period (1996 – 2020) to repay the excess amount of withdrawn water. In other words, all overdrafts of its allocation must be offset by future additional reductions in order to maintain the state's annual 3,200 cfs limit. Furthermore, Illinois agreed to take steps to ensure that its municipalities using Lake Michigan water comply with their state allocation limits and conserve water.

Accounting, therefore, is critical to determining how much water is currently used, and how much of the diversion still remains to be distributed to inland suburbs to sustain anticipated growth. The diversion had historically been measured from the CSSC, but the MOU required it be measured from the lakefront. Illinois was required to install acoustic velocity meters at the Chicago River and O'Brien locks which the U.S. Geological Survey and the Corps would use to measure the state's direct diversion. A transitional accounting system was instituted until the new lakefront measurement system could be calibrated. During the transition, lakefront diversion measurements were given a 168 cfs consumptive use credit. Stormwater runoff was fixed at 800 cfs through the year 2020, with Illinois agreeing to undertake leakage control and return pumpage measures at the Chicago River lock and turning basin. The State of Illinois also agreed to better enforcement of the water conservation measures imposed by the decrees. The negotiated MOU effectively gives the state an annual diversion limit of 2,568 cfs (3,200 – 800 (stormwater runoff) + 168 (consumptive use credit)) that would ratchet back up to 3,200 as the water debt is paid.

Annual water accounting by the Corps indicates that Illinois has been successful in complying with the 1996 MOU. Illinois has not exceeded its annual diversion targets since instituting the improved lakefront leakage and stormwater runoff control measures; substantially reducing the state's Unaccounted For Flow (UFF) losses from water distribution system leakage; and metering more water users.[39] The Illinois Department of Natural Resources' Office of Water Resources anticipates that it can now make up its

[39] DANIEL INJERD, ILL. DEP'T OF NATURAL RES., LAKE MICHIGAN WATER AVAILABILITY: WHITE PAPER FOR THE NORTHEASTERN ILLINOIS REGIONAL WATER SUPPLY PLANNING GROUP (Jan. 2009).

historic accumulated overcharge years before schedule by simply using the water that it is currently diverting more efficiently within the Lake Michigan service area.[40]

E. State Legislation

In order to comply with the Supreme Court-mandated diversion limit of 3,200 cfs, an allocation system was mandated by the State of Illinois in the Level of Lake Michigan Act.[41] This law designated the Office of Water Resources (OWR) of the Illinois Department of Transportation (now since transferred to the Illinois Department of Natural Resources) as the agency responsible for managing the state's apportionment "among regional organizations, municipalities, political subdivisions, agencies or instrumentalities."[42] Additionally, as required by the 1986 WRDA (which, under § 1109, applies to the basin boundary), the Act prohibits Lake Michigan water from being used outside Illinois without prior approval of the other Great Lakes states and the IJC.

Under the Act, all users of Lake Michigan water must possess a valid allocation permit from OWR. Applicants apply to OWR for an allocation, which becomes effective upon acceptance of an allocation permit by the applicant. Most of the initial allocation permits were issued for the entire forty-year period addressed by the 1980 Supreme Court decree, which expires in 2020. Permits issued after 1980 also end in 2020. Allocations may not be transferred without the approval of OWR, and OWR will not approve water transfers unless they are consistent with the state's allocation criteria.

In granting allocations, OWR gives highest priority to communities that can prove that Lake Michigan water is the most economical water source for its customers or where it is needed for navigational flows or to ensure water quality in the CSSC. Permits issued to reduce regional use of the deep Cambrian-Ordovician aquifer are given lower priority. The experience of Oakbrook Terrace is illustrative of how OWR applies these criteria. In late 1996, the city of Oakbrook Terrace needed an OWR allocation permit to join the DuPage Water Commission, a regional water supply agency that purchases Lake Michigan water from Chicago and distributes it to DuPage County member communities. OWR issued the allocation permit to Oakbrook Terrace only after the community proved that its residents would pay $6.85 per 1,000 gallons to buy Lake Michigan water from the DuPage Water Commission. Use of groundwater would cost residents $10.00 per 1,000 gallons.

In determining the individual allocations allowed under its permits, OWR considers the anticipated water needs of the community, based on its estimated population growth and the adequacy of water supplies other than Lake Michigan water. The allocation decisions are largely formula-driven, based on a community's projected demographic and economic growth over the permit term. OWR's allocation orders are periodically reviewed and revised to address changes in regional growth patterns, as well as to accommodate new requests for Lake Michigan water.

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[40] *Id.*
[41] 615 ILL. COMP. STAT. 50.
[42] *Id.* 50/1.2

OWR also considers a community's water conservation measures. These measures include such things as metering, leak control, lawn watering restrictions, and the use of water conserving fixtures (an issue concurrently addressed by the model energy, appliance and building code requirements incorporated by reference into the federal Energy Policy Act of 1992[43]). Leak control has been a significant problem, since only unaccounted-for flows of less than 8% of a community's allocation are considered acceptable. In its 1999 allocation order, for example, OWR reviewed the allocation permits of thirty-one communities with unaccounted-for flows exceeding 8%; these included such diverse communities as Chicago, Buffalo Grove, Calumet City, Glenview, Highland Park, Lockport, and Skokie.

Even if a community already has a water allocation permit, OWR may still modify or terminate the permit under four sets of circumstances.[44] First, an allocation may be modified if there is evidence of a substantial change in circumstances that results in a change in water needs. For example, if a municipality's population grows dramatically. Second, an allocation may be terminated if there is a violation of a permit condition or the failure or neglect to properly utilize an allocation. This rationale, for instance, was the basis for the agency revoking Western Springs' allocation in OWR's 1999 allocation order. Third, an allocation may be modified if there is a determination that a total reallocation is necessary to best utilize the Lake Michigan diversion. OWR had undertaken this process when it adjusted many communities' allocations in 2008 based on CMAP's most recent population projections and its own projected compliance with the 1996 MOU. Finally, an allocation may be modified if wastewater dilution or navigation needs in the CSSC have changed. This would be similar to the state's modification of the U.S. Supreme Court's decree in the 1950s, when the diversion at Chicago was temporarily raised from 3,200 cfs to 8,500 cfs to ensure adequate navigational flow on the Illinois Waterway and Mississippi River during drought conditions.

1. Groundwater

There is no comprehensive program in place to manage groundwater withdrawals used for water supply purposes. Instead, one finds a patchwork of statutes, most directed towards protecting groundwater quality, that establish a fragmented management structure for this important water resource. The only state statute expressly regulating groundwater quantity is the 1983 Illinois Water Use Act,[45] which creates a statewide reasonable use standard for groundwater users, but which also expressly excludes the Chicago metro region from its limited regulatory jurisdiction.

Because shallower aquifers (especially surficial aquifers in sand and gravel deposits with high transmissivity or in karst regimes) have fewer natural mechanisms available to attenuate any pollution introduced at the surface, groundwater contamination risks may be greater than with deeper, confined bedrock aquifers. Groundwater protection measures are promoted through the Illinois Groundwater Protection Act[46] and Environmental Protection

[43] Pub. L. No. 102-486, 106 Stat. 2776.
[44] ILL. ADMIN. CODE tit. 17, § 3730.310(b).
[45] 525 ILL. COMP. STAT. 40/1 – 40/15.
[46] 415 ILL. COMP. STAT. 55/1 – 55/9.1

Act.[47] These two statutes establish the State's Interagency Coordinating Committee on Groundwater, provide for a statewide groundwater quality monitoring program, create setback zones around wellheads, and allow Illinois EPA to designate recharge areas where land uses with high pollution potential become subject to more stringent regulation (including increased groundwater monitoring and even closure for very high risk activities). Public water supplies using groundwater and the water treatment needed to ensure potability of such public supplies are also protected by the Illinois Department of Health under the state's Well Construction Code[48] and its Public Water Supply Regulations.[49]

Besides establishing rights over groundwater use, the limited management of groundwater quantities is authorized under the Water Use Act for areas outside the Lake Michigan water service area. The Water Use Act provides that Soil and Water Conservation Districts must be notified of all new large-scale wells exceeding 100,000 gallons per day (gpd) capacity so that potential well interference issues can be identified and assessed.[50] The local districts, in turn, are directed to notify local units of government whose water supplies might be disrupted and are also authorized to contact the Illinois State Water Survey and request that impact assessments be undertaken by the Survey. Water use conflicts identified by the Survey can be resolved by the local soil and water conservation district recommending that the Illinois Department of Agriculture limit pumpage from such wells when well interference is likely.

The Water Use Act authorizes "each District within any county in Illinois through which the Iroquois River flows, and each District within any county in Illinois with a population in excess of 100,000 through which the Mackinaw River flows" to recommend to the Illinois Department of Agriculture groundwater withdrawal restrictions.[51] This language essentially limits this authority to Soil and Water Conservation Districts in Kankakee, Iroquois, Tazewell, and McLean Counties, all east-central downstate counties outside of the Chicago region. Moreover, the statute expressly exempts "the region governed by the provisions of 'An Act in relation to the Diversion and apportionment of water from the Lake Michigan watershed,' approved June 18, 1929 as amended" from § 45/5.1.[52] Thus, the Chicago metro region within the Lake Michigan water service area is expressly excluded from the regulatory scope of the statute. Finally, informal discussions with Illinois State Water Survey staff to collect information about the number of well interference requests received by that agency under the Water Use Act indicate that neither the Illinois Department of Agriculture nor its Water Survey were ever funded by the Illinois General Assembly to undertake their analytical or management responsibilities, so the groundwater management provisions of the Water Use Act apparently remain unexercised to this day.

2. Surface Water

Surface water resources are generally managed by the Illinois Environmental Protection Agency and by the OWR. The Illinois Environmental Protection Agency, under relevant

[47] *Id.* 5/1 – 5/58.18.
[48] *Id.* 30/1 – 30/9.
[49] *Id.* 40/1 – 40/15.
[50] *Id.* 45/5.
[51] *Id.* 45/5.1(a).
[52] *Id.* 45/3.

provisions of the Illinois Environmental Protection Act, ensures compliance with respect to meeting national water quality management goals mandated under the federal Clean Water Act (CWA) and is also responsible for ensuring public water supply compliance to the potability, operational, reporting and source water protection requirements of the federal Safe Drinking Water Act.

The OWR coordinates the state's floodplain management program and reviews all proposed construction affecting the state's river, streams, and lakes through its waterway permit program created under the Illinois River, Lakes, and Streams Act.[53] Neither state agency sets any withdrawal limits from surface water bodies, even during droughts when stream baseflows can precipitously decline, threatening aquatic and near-shore habitats.

II. The Institutional Context of Water Supply Planning in Northeastern Illinois

A. Water Supply Resources of Northeastern Illinois

Three major water resources in the Chicago metro area are currently used for public water supply purposes. These are, in the order of their relative use,: Lake Michigan, groundwater (withdrawn principally from deeper bedrock aquifers), and surface water (principally from the Fox and Kankakee Rivers). Of the three, only Lake Michigan is comprehensively managed under the U.S. Supreme Court's 1967 and 1980 decrees in *Wisconsin v. Illinois*.

Northeastern Illinois uses about 2.1 bgd of Great Lakes water, which is equivalent to the 3,200 cps diversion allowed under the Supreme Court decrees. Under the annual water use audit required by the decrees for the Lake Michigan service area, 59.9% of the diversion was used for domestic supply purposes, 27.7% was allocated to diverted runoff, 9.2% was discretionary (used largely to ensure wastewater discharges into the CSSC to meet ambient CWA standards), 1.6% was lost in lockage, 0.9% is leakage and Unaccounted for Flow (UFF), and 0.8% is to ensure adequate navigation flows in the CSSC for Water Year 2005 (the most recent water use audit).[54] The domestic supply component meets the needs of 77% of the population within the Chicago Metropolitan Agency for Planning's water supply planning area.

Groundwater meets the needs of about 17% of the region's residents outside of the Lake Michigan service area. The Illinois State Water Survey estimates that about half the groundwater is withdrawn from the confined Cambrian-Ordovician deep bedrock aquifer system and about half from shallow, surficial aquifers scattered throughout the region.[55] The deep bedrock system is currently estimated by the Illinois State Water Survey to have a long-term sustainable yield of approximately 65 mgd under an ideal, equalized

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[53] 615 ILL. COM. STAT. 5/4.9-5/30.

[54] Injerd, *supra* note 39.

[55] Allen Wehrmann, Ill. State Water Survey, *Regional Groundwater Modeling Results for Water Supply Planning in Northeast Illinois*, presentation to the Northeastern Illinois Regional Water Supply Planning Group, Dec. 16, 2008, *available at* http://www.isws.illinois.edu/iswsdocs/wsp/ppt/NEIL_RWSPG_Dec2008.pdf (last visited June 10, 2009).

distribution of wells. Under the current distribution of wells in the region, sustainable yield is estimated to be about 46 mgd. Current use of groundwater is estimated to be about 72 mgd, exceeding both sustainable yield estimates and resulting in localized draw-downs of the bedrock aquifer's potentiometric surface.[56] Current trends suggest a future increase in groundwater use as the 11-county metro region continues to develop outside of the Lake Michigan service area.

Shallow aquifers within Kane County were identified and mapped as part of a county-wide water supply planning study conducted by the Illinois State Water Survey.[57] Shallow aquifers associated with the Fox River basin are also currently being mapped and modeled by the State Water Survey as part of the ongoing regional water supply plan being developed by CMAP. However, aside from these sub-regional studies, relatively little is known about the location or yields of the shallow aquifers in northeastern Illinois. Preliminary estimates in the 2000 Strategic Plan for Water Resources Management by the Northeastern Illinois Planning Commission (CMAP's predecessor regional planning agency) suggest that as much as 580 mgd of water may be available within the unconfined shallow aquifer system, though these surficial water supply resources remain susceptible to both drought and pollution.[58]

Both the Fox and Kankakee Rivers serve as limited water supply resources for only a few communities in northeastern Illinois. To help the Regional Water Supply Planning Group develop policies for surface water resources, the Illinois State Water Survey is developing a coupled surface water and groundwater model for the Fox River basin.[59] These models are suggesting a close relationship between waterway levels and the recharge of adjacent shallow aquifer systems. Moreover, about a third of the Fox River's baseflow is from wastewater discharges from upstream sewage treatment plants in Wisconsin (suggesting that the promotion of water conservation measures by that neighboring state might impact the quantity of water available to downstream users in Illinois), and the waterway remains vulnerable to pollution threats and especially to droughts. Finally, ecological constraints may further constrain the use of surface waters in the region as a water supply resource, since historic instream flows likely will have to be maintained in order to protect aquatic and near-shore habitats. Maintenance of stream-flows sufficient to sustain these uses is

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[56] Derek Winstanley, Ill. State Water Survey, *Water Supply Planning and Management: Sustainability*, presentation to the Northeastern Illinois Regional Water Supply Planning Group, June 1, 2007, *available at* http://www.isws.illinois.edu/iswsdocs/wsp/ppt/MACRWSPCMay312007.pdf (last visited June 10, 2009). *See also*, ADRIAN P. VISOCKY, ET AL., GEOLOGY, HYDROLOGY, AND WATER QUALITY OF THE CAMBRIAN AND ORDOVICIAN SYSTEMS IN NORTHERN ILLINOIS, ILLINOIS WATER SURVEY COOPERATIVE GROUNDWATER REPORT 10 (1985).

[57] Allen Wehrmann, Ill. State Water Survey, *Kane County: Highlights of ISWS Work and Application to RWSPG*, presentation to the Northeastern Illinois Regional Water Supply Planning Group, Oct. 23, 2007, *available at* http://www.isws.illinois.edu/iswsdocs/wsp/ppt/Kane_Co_Water.pdf (last visited June 10, 2009).

[58] NORTHEASTERN ILLINOIS PLANNING COMMISSION, STRATEGIC WATER RESOURCES MANAGEMENT PLAN (2000), *available at* http://www.nipc.org/water_plan_2001.htm (last visited June 10, 2009).

[59] H. Vernon Knapp, Ill. State Water Survey, *NE IL Streams: Factors Affecting Distribution and Availability of Streamflow for Water Supply and Instream Needs*, presentation to the Northeastern Illinois Regional Water Supply Planning Group, May 22, 2007, *available at* http://www.isws.illinois.edu/iswsdocs/wsp/ppt/SW_Availability.pdf (last visited June 10, 2009).

complicated by the fact that regional sanitary districts serving several municipalities may discharge their treated wastewater to different waterways than the ones from which municipal water supplies are withdrawn.

B. Regional Water Supply Management Initiatives

Over the past fifty years, the State of Illinois has undertaken several water resources planning initiatives both statewide and in northeastern Illinois that address groundwater protection and drought management. For the most part, these initiatives involved monitoring and modeling initiatives by the Illinois State Water Survey and policy coordination between various state agencies with an interest in groundwater and surface water resources management.[60]

The Northeastern Illinois Planning Commission (NIPC) also was involved in water resources planning and management during this period, particularly with respect to area-wide water quality management programs created in the 1970s under the CWA. In 2000, NIPC initiated and adopted a *Strategic Plan for Water Resources Management*, which identified and addressed flooding, water quality, and water supply issues facing the region. The water supply section of the plan stressed the need for more monitoring and modeling of water resources in order to be able to develop better policies for water supply provision in the region, especially since NIPC's preliminary assessments of water supply resources in the region indicated that there might be localized water shortages by 2020 as a result of the projected demographic and economic growth of the Chicago metro area.

In 2002, NIPC joined with regional planning commissions in southeast Wisconsin and northwest Indiana (along with the Chicago Area Transportation Study, responsible for transportation planning in the Chicago metro area) to examine issues of joint concern. This meeting, held at the Johnson Foundation's Wingspread Conference Center in Racine, Wisconsin (and funded by the Joyce Foundation and by the Illinois-Indiana Sea Grant College Program), led to a formal agreement between the governing boards of the four regional agencies to cooperate and coordinate their planning on issues of common interest that transcended their jurisdictional boundaries.[61] These common concerns included water supply and water resources planning. NIPC then joined with these other three regional planning agencies to create the Southern Lake Michigan Water Supply Consortium for the larger tri-state region. The Consortium's first action was to convene a water supply conference, organized by the Illinois-Indiana Sea Grant College Program with funding from

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[60] *See, e.g.,* DEREK WINSTANLEY, ET AL., THE WATER CYCLE AND WATER BUDGETS IN ILLINOIS: A FRAMEWORK FOR DROUGHT AND WATER SUPPLY PLANNING, ILL. STATE WATER SURVEY REPORT I/EM 2006-2 (2006).

[61] The Wingspread Regional Accord between Northeastern Illinois Planning Commission, Chicago Area Transportation Study, Northwest Indiana Regional Planning Commission, and Southeast Wisconsin Regional Planning Commission (2001), *available at* http://www.nipc.org/news/wingspread/THE%20WINGSPREAD%20ACCORD%20CERTIFICATE.pdf (last visited June 10, 2009).

the Joyce Foundation, to build a larger constituency for the issue of regional water supply planning within the Great Lakes basin.[62]

This conference led to an increased interest in water supply planning by nonprofit planning and environmental groups within the Chicago metro area. In 2005, three of these groups – the Metropolitan Planning Council, the Openlands Project, and the Campaign for Sensible Growth – met to discuss strategies for promoting water supply planning in the region. This initiative was especially timely, since northeastern Illinois faced a drought during the summer of 2005, the same year that Illinois Governor Rod Blagojevich was running for re-election. The three non-profit organizations approached the Chicago Metropolis 2020 initiative of the Commercial Club of Chicago to request their assistance in lobbying the Governor for action.

In January 2006, Governor Blagojevich adopted Executive Order 2006-01, directing the Illinois Department of Natural Resources (IDNR) and its State Water Survey to develop water supply plans for two areas of the state where the agencies were already engaged in studying and modeling water supply resources – one in northeastern Illinois (served by Lake Michigan and the Cambrian-Ordovician Aquifer) and the second in east-central Illinois (served by the Mahomet Aquifer).[63] The General Assembly also appropriated $3.5 million to IDNR over the next three years to undertake water supply planning in these areas.

In 2006, NIPC merged with the Chicago Area Transportation Study to form a new regional agency, the Chicago Metropolitan Agency for Planning (CMAP). IDNR then agreed to transfer $1.5 million of its state appropriation to CMAP to develop a regional water supply plan for the region. To guide its planning process, CMAP created the Northeastern Illinois Regional Water Supply Planning Group (RWSPG), an advisory policy board whose thirty-five members were elected from nine different stakeholder constituencies within the region (academia and public interest; agriculture; business, industry and power; conservation and resource management; county government; environmental advocacy; municipal government and municipal water suppliers; real estate and development; and wastewater treatment and non-municipal water suppliers). Most of the funding under the state's appropriation was to the Illinois State Water Survey to develop groundwater and coupled groundwater/surface water models for both the CMAP and Mahomet Aquifer regions.

The RWSPG has been meeting monthly since 2006 to act as a forum to resolve conflicts between the various stakeholders and to collaboratively develop CMAP's regional water supply plan with the support of CMAP's staff. In 2008, however, Governor Blagojevich vetoed the state's appropriation to IDNR under Executive Order 2006-01, citing the state's budgetary crisis as the reason for discontinuing the funding of the plan. In response to being defunded by the Governor, CMAP was forced to lobby its RWSPG stakeholders and

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[62] Southern Lake Michigan Water Supply Consortium, Straddling the Divide Conference: Water Supply Planning in the Lake Michigan Region, held Feb. 15-16, 2005 at the Holiday Inn-Merchandise Mart in Chicago, Ill.

[63] Office of the Illinois Governor, *Executive Order for the Development of State and Regional Water Supply Plans*, Executive Order 2006-01 (2006) *available at* http://wwwb.illinois.gov/PressReleases/ShowPressRelease.cfm?SubjectID=18&RecNum=4579 (last visited June 30, 2009).

other water supply planning constituents in order to raise $100,000 (primarily from grants by public water utilities, wastewater treatment operators and county governments) on an emergency basis to complete its regional water supply plan in 2009.

III. CMAP's Regional Water Supply Plan

In negotiating the scope of services to be provided by IDNR to carry out the regional water supply plan for northeastern Illinois mandated under Executive Order 2006-1, CMAP modified its regional constituency to expand its planning jurisdiction beyond the one established by its enabling legislation. NIPC originally had a five-county planning jurisdiction (Cook, DuPage, Will, Lake, and McHenry), while the Chicago Area Transportation Study (CATS), the region's designated Metropolitan Planning Organization for transportation planning purposes, encompassed a six-county region (adding Kane County and the township of Grundy County) in order to adequately meet its air quality monitoring responsibilities for mobile sources under the federal Clean Air Act. Since the creation of CMAP involved a merger with CATS, CMAP inherited the six-county CATS region when it was created. For water supply planning purposes, however, CMAP expanded its jurisdiction to a ring of counties around its legislative constituency. These counties, which included Kankakee, Grundy, Kendall, DeKalb, and Boone, joined the planning process voluntarily and expanded the counties subject to CMAP's jurisdiction to eleven.

Two major studies were undertaken to support the development of the plan's more specific policies. One of these was a water supply demand study that estimated water use in the region out to 2050, based on CMAP's projections of regional growth.[64] This study developed three different scenarios of future regional water demand for different sectors of the region's economy: (1) a "business as usual" trend analysis that extended current levels of water demand into the future; (2) a scenario with 20% less water use in the future; and (3) a scenario with 20% greater future water use. These scenarios within the demand model examined water use in various sectors of the regional economy, including power generation and agriculture, in addition to municipal and industrial uses.

As part of CMAP's planning process, the Illinois State Water Survey concurrently conducted a supply study. In 2007, the Survey began to develop models that could estimate the impact of these alternative demand scenarios on the major water supply resources in the region. The key model being developed by the Survey will examine the dynamics of the region's Cambrian-Ordovician bedrock aquifer system to assess well interference problems and to project future depressions of the aquifer's potentiometric surface from mining of the aquifer. This regional aquifer model is based on one developed by the Survey for a water supply study undertaken for Kane County in 2003. A second model is also being developed for the Fox River watershed to assess the relationship between the Fox River and associated surficial aquifers in the western portions of the regions that rely on groundwater to meet their drinking water needs.

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[64] BEN DZIEGIELEWSKI AND FARHAN J. CHOWDHURY, SOUTHERN ILLINOIS UNIVERSITY, CARBONDALE, REGIONAL WATER DEMAND SCENARIOS FOR NORTHEASTERN ILLINOIS: 2005-2050, PROJECT COMPLETION REPORT (2008) (on file with author).

The water supply plan currently being developed by CMAP is focusing on water conservation as the lynchpin of its water resource management policy. A variety of conservation measures are being considered, including increased use of water metering, water-conserving fixtures and appliances, native and conservation landscaping, and leakage and water conservation audits. Considerable attention is also being paid to public education and outreach. It is expected that CMAP will recommend that municipalities and water utilities within the region hire water conservation coordinators.

Several innovative issues of water supply policy are being examined in CMAP's plan. Some of these policies might include a discussion of the economic issues of water supply management and conservation, including conservation pricing and various rebate incentives. Moreover, a natural resource economist has been hired by CMAP to examine the efficacy of water supply planning, the different water rate systems in place in the region and the elasticity of water demand to water pricing under these different rate structures. Another significant planning issue is drought management, especially as a secondary impact of future changes in climate resulting from climate change (though the Survey's attempts to scale down various national-level climate models to fit the area of northeastern Illinois has resulted in inconsistent projections of future temperature and precipitation changes within the region). Finally, CMAP's water supply plan will include relationships between water supply resources and land use, by incorporating the water supply plan into the agency's 2040 regional comprehensive plan and by addressing the need to protect aquatic ecosystems by preserving stream baseflows from competing future uses of these waterways for drinking water withdrawals or for shallow aquifer recharge.

IV. Lessons from CMAP's Planning Process

CMAP's proposed water supply plan has some strengths and weaknesses that can influence similar exercises by regional agencies in other parts of the nation outside the Great Lakes. One important component of CMAP's plan is its focus on a larger region than the five counties that initially comprised the Chicago metropolitan area for planning purposes. Incorporating a second tier ring of counties broadened the planning area spatially to better correspond to the aquifers and watersheds comprising the principal water supply resources of the region. The fact that these outer-ring counties perceive that they would benefit by voluntarily joining CMAP's planning process will likely build a stronger constituency for the plan once it is completed and implemented, as well as build a broader constituency for the agency itself within the larger region. One significant benefit that is probably being perceived by these largely rural counties in choosing to join the planning process is the possible use of the water supply limitations being addressed by CMAP's supply and demand studies and by the State Water Survey's models to justify more stringent land use controls that can better manage the runaway exurban sprawl threatening their historic small town character and quality of life.

The appropriate scale of water supply planning is likely to transcend even this expanded "region" in northeastern Illinois. At the same time that the regional planning agency for the Chicago metro area has expanded the scope of its water supply planning process to include exurban communities beyond its official jurisdiction, CMAP also has worked with the regional planning agencies in adjacent states to coordinate its planning efforts at an inter-state scale. The Fox River flows southward into Illinois from Wisconsin, while the

Kankakee River flows westward from Indiana, so bringing in the Southeast Wisconsin Regional Planning Commission (which is undertaking its own water supply studies for the western suburbs of Milwaukee) and the Northwest Indiana Regional Planning Commission into the planning process makes sense in terms of protecting the headwaters and upstream segments of these critical waterways. Moreover, the productive deep bedrock aquifers underlying northeastern Illinois are partially recharged in south-central Wisconsin.

CMAP had institutionalized these multi-state planning relationships by entering into formal interagency agreements with neighboring regional planning agencies, principally by signing the Wingspread Accord and by participating in the Southern Lake Michigan Regional Water Supply Consortium. It is likely that these relationships will continue into the future: Southeastern Wisconsin Regional Planning Commission, CMAP, and Northwest Indiana Regional Planning Commission met again in the fall of 2008 at the Wingspread Conference Center, along with the Southwestern Michigan Regional Planning Commission, to enter into a new accord to support inter-agency cooperation throughout the entire southern Lake Michigan basin in the areas of transportation and freight planning and water supply planning. As was the case with the first Wingspread Conference, this meeting was financially supported in part by the Illinois-Indiana Sea Grant College Program.

An unusual strength of CMAP's water supply plan is the strong integration of land use planning and water supply planning within the region. This integration is traditionally addressed by programs and policies to manage stormwater runoff and other nonpoint pollution threats to waterways, since increases in impervious surface as the result of development exacerbate water pollution risks. These management concerns arise largely from the Safe Drinking Water Act's provisions protecting source waters (incorporated into state Total Daily Maximum Load programs under the CWA), as well as by projected increases in both the costs and difficulties of water treatment should the waterway be used as a drinking water source. However, CMAP's plans also focus on the stormwater component of the accounting system employed by the Corps to ensure state compliance with the 1967 and 1980 U.S. Supreme Court decrees governing the Chicago diversion, since the stormwater captured by combined sewer systems in the regions are also diverted into the Mississippi River basin.

The motivation for these pollution control measures is not only water quality management. Every gallon of stormwater that is managed on-site, and which does not enter a stormwater or combined sewer system to be diverted out of the Great Lakes basin, means an extra gallon of Lake Michigan water that now becomes available within the Lake Michigan service area. These savings allow for more efficient use of Lake Michigan water within the service area or for expansion of the service area itself into suburban or exurban areas currently served by groundwater. Green infrastructure, the open spaces and natural areas that naturally manage runoff and improve water quality, and other land use policies for stormwater management are likely to become an important component of water supply planning in northeastern Illinois, if only to ensure an adequate supply of Great Lakes water

to new and existing residents within the Lake Michigan service area as the region adds another 2.8 million residents by 2050.[65]

However, there are weaknesses in CMAP's planning approach. One limitation is that many of the policies being considered by the agency are aspatial: CMAP's proposed conservation and public education policies can be implemented anywhere within the region, in areas served by Lake Michigan, groundwater, or other surface water resources. Therefore, resources spent on modeling the deep aquifer system and in developing a coupled surface water and groundwater model for the Fox River basin really are not influencing how and where these policies are being applied. The regional planning agency will have to develop more effective spatial policies to guide the installation or expansion of new wellfields and water treatment plants, the regionalization of municipal water supplies and the extension of Lake Michigan water into areas that may be facing future water shortages, as predicted by the Illinois State Water Survey's models. However, the adoption of regional or state policies directing or establishing funding priorities for future water infrastructure is likely to be politically controversial, since only some communities within the region are likely to individually benefit from more efficient and guided infrastructure investment.

It is unclear whether the agency, which is largely advisory and whose membership is largely voluntary, has the courage to spatialize its policies, so that some of its constituents may become water "winners" and others water "losers." A generalized set of water conservation policies applied region-wide assumes that everybody in the region can be a growth "winner" through the careful husbandry of their water resources to meet their projected demand. Clearly, the five rural counties that have voluntarily joined CMAP's regional water supply planning process may be looking to the region's water resource limitations as a justification to keep sprawl under control, effectively choosing to become the region's growth "losers." Water resources investments should at least correspond to the agency's "smart growth" land use planning objectives to guide regional development and conservation policies alone will not achieve such correspondence.

It is also unknown whether the convoluted management structure of the Regional Water Supply Planning Group (RWSPG), with an artificial division of self-defined "stakeholders" and a representative election process for each stakeholder group, is a more efficient, or even more effective, way to do regional planning than the more traditional approach of just having the agency's constituent communities appoint themselves or their own representatives to a water supply planning subcommittee. CMAP's elected RWSPG is intended to provide enhanced public participation, but, even though elected, the representatives have no real accountability to their broadly defined and self-defined voluntary constituencies. As a result, there might be less internal lobbying and caucusing by and among the RWSPG representatives than might otherwise occur in a more traditional representation subcommittee planning structure where there is actual political accountability to the local officials who appointed their representatives to the advisory committee. It is unclear whether there are any significant advantages to adopting this complicated management structure, even though it brings into the decision-making process

[65] CHICAGO METROPOLITAN AGENCY FOR PLANNING, DRAFT REGIONAL WATER SUPPLY PLAN, VER. 5 at 10 (May 19, 2009), *available at* http://www.cmap.illinois.gov/watersupply/minutes.aspx (last visited June 10, 2009).

members of the larger concerned public who might not otherwise find themselves appointed to such an advisory body by their own elected officials. Whether this broader engagement legitimizes the resulting policies more is still an unresolved issue.