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WATER QUANTITY

Ongoing Problems and Emerging Solutions

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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

[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.

Managing Agricultural Water Use During Drought: An Analysis of Contemporary Policies Governing Georgia's Flint River Basin[1]

Mark Masters, Ronald Cummings, Brigham Daniels, Kristin Rowles, and Douglas Wilson[2]

I. Introduction

If you were to ask Georgia's agricultural water users about the security of their right to use water, you would find that the conventional wisdom among these users is that their water rights are secure. While some agricultural water users may gripe about the additional hassle caused by recent changes to Georgia's water law, most users likely believe that these changes have not impacted the security of their water rights. In fact, a substantial number of these users may even hold the view that because the state has issued them a use permit, the changes to the law have, if anything, increased the security of their water rights.

Those who follow Georgia water law closely, however, would likely characterize the changes made over the past two decades quite differently. A close examination of Georgia's water law indicates that considerable confusion and uncertainty have been introduced into the legal regime, particularly in the case of the thirsty Flint River Basin. The changes have complicated water rights at a time when pressure on Georgia's water resources is growing, increasing the need for certainty.

This article takes a closer look at some of the changes made to Georgia water law, focusing on how these changes impact the Flint River Basin. This survey paints a picture of laws that are often ambiguous, confusing, and fraught with uncertainty. The central question raised is whether the tenure of an agricultural user's permit correlates with the security of that water user's claim to water. The perception of many agricultural water users, particularly those with grandfathered permits, is that tenure is highly correlated with the security of the water right, with the first round of permitting (for uses initiated prior to July 1, 1988) seen as the most secure and the later rounds of permitting seen as increasingly tenuous.

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[1] An earlier version of this article was published by the Georgia Water Planning and Policy Center as Water Policy Working Paper 2007-001 and is available at http://www.h2opolicycenter.org/pdf_documents/water_workingpapers/WP2007-001_final.pdf (last visited June 30, 2009).

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A casual reading of Georgia law seems to harmonize with the agricultural water users' lay understanding. Legislation enacted by the Georgia General Assembly in 1988, 2003, and 2006, in essence, creates different "classes" of agricultural water use permits. In 1988, the General Assembly placed farmers who had acquired their water use permits based on use prior to July 1, 1988 and submitted applications to the Georgia Environmental Protection Division (EPD) prior to July 1, 1991 into a distinct tenure from subsequent permittees.[3] These permits are commonly known as "grandfathered" permits, but we refer to them as "Tenure 1" permits. There are some major distinctions between Tenure 1 and subsequent permits. First, Tenure 1 permits were granted by EPD on the basis of a user's equipment capacity, as opposed to the reasonable use criteria applied to subsequent tenures of permits.[4] However, as discussed below, the meaningfulness of this distinction is unclear and even problematic. Second, in the Flint River Basin, all Tenure 1 permit holders qualify to participate in the drought abatement program created by the Flint River Drought Protection Act.[5]

A second class of permits, which we refer to as "Tenure 2," are permits based on use initiated after July 1, 1988 and on applications submitted to the EPD prior to December 1, 1999. The only difference between Tenure 2 and Tenure 1 permits is that limits to water use under a Tenure 2 permit are based on a "reasonableness" criterion, a multifactor weighing test left largely to the EPD's discretion.[6] In the Flint River Basin, Tenure 2 permit holders, like Tenure 1 permit holders, are eligible to participate in the drought abatement program created by the Flint River Drought Protection Act.[7]

A moratorium on the issuance of new agricultural water use permits between December 1, 1999 and March 20, 2006 created a third class of permits. During the moratorium period, the EPD received 1,134 permit applications for water use involving the irrigation of approximately 96,219 acres.[8] The EPD has been reviewing and processing the backlog applications since the moratorium was lifted. Legislative amendments to Georgia's water

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[3] It is important to note that, particularly for Georgia's groundwater users, it is not entirely clear what the actual limits of their rights were prior to 1988. In some instances, it appears that Georgia groundwater users had absolute dominion over their groundwater resources, limited only by their ability to get it out of the ground. In other instances, particularly in the case of a strong hydrological connection between groundwater and surface water, it appears that groundwater users were limited by a reasonableness standard. This issue is discussed in further detail in the Appendix to RONALD CUMMINGS, ET AL., MANAGING AGRICULTURAL WATER USE DURING DROUGHT: AN ANALYSIS OF CONTEMPARY POLICIES GOVERNING GEORGIA'S FLINT RIVER BASIN, Water Policy Working Paper 2007-001 (2007) *available at* http://www.h2opolicycenter.org/pdf_documents/water_workingpapers/WP2007-001_final.pdf . This may prove quite important in future litigation because it could alter how a reviewing court treats grandfathered permit holders.

[4] GA. CODE ANN. § 12-5-31(a)(3) (surface water); § 12-5-105(a) (groundwater).

[5] *Id.* § 12-5-31(h) (surface water); § 12-5-97(a) (groundwater). The details of the Flint River Drought Protection Act are addressed in Section IV.

[6] *Id.* § 12-5-31(e)-(g) (surface water); § 12-5-96(d) (groundwater).

[7] *Id.* § 12-5-31(h) (surface water); § 12-5-97(a) (groundwater).

[8] GA. DEP'T OF NAT. RES., ENVIRONMENTAL PROTECTION DIVISION, FLINT RIVER REGIONAL WATER DEVELOPMENT AND CONSERVATION PLAN, 33, 41 (Mar. 20, 2006), *available at* http://www1.gadnr.org/frbp/Assets/Documents/Plan22.pdf (last visited June 30, 2009).

laws adopted during the moratorium period affect all backlog permits equally, regardless of the date of the application.

Three such amendments are of particular interest. First, participation in the Flint River Drought Protection Act's acreage reduction program (a voluntary program providing financial incentives to farmers who agree not to irrigate) is denied to all permit holders with applications submitted to the EPD after December 1, 1999. Second, for all permits issued after July 1, 2003, an amendment provided that permit holders may not use water until a state-approved water meter is installed on permitted pumps.[9] This provision does not distinguish between the application submission date and the permit issuance date, but it is reasonable to assume that it applies to all backlog permits since all are issued after July 1, 2003.[10] Additionally, groundwater users who receive backlog permits have a special obligation to file annual reports documenting their water use to the state.[11]

As an aside, there is an additional distinction between backlog permits and Tenure 1 and 2 permits which should be kept in mind in later discussions of how permits are treated during drought. Tenure 1 and 2 permits were issued with little or no consideration given as to the location of the proposed withdrawal. In considering backlog applications, however, the EPD plans to give considerable attention to the locations of proposed withdrawals, especially in sub-areas that are considered "vulnerable" to low flow conditions during drought.[12] Thus, EPD may in the future deny some backlog permit applications that would have been approved had they been submitted prior to December 1, 1999.

A third legislative amendment makes a distinction between backlog permits with applications submitted to the EPD before and after December 31, 2002. For permit holders that submitted applications to the EPD after December 31, 2002, the permit holder must pay the costs for the required water use meter. Thus, we divide backlog permits into two Tenure classes. Tenure 3 permits are those backlog permits for which applications were received by the EPD prior to December 31, 2002 and, therefore, not subject to the meter payment requirement. Tenure 4 permits are backlog permits where applications were received by the EPD after December 31, 2003 and permit holders must pay for their meters.

The final class of permits, Tenure 5, are those for which applications were submitted after March 20, 2006. In addition to all the restrictions imposed on Tenure 4 permit holders, Tenure 5 permits are subject to a 25-year term and a permit application fee.[13] In addition, the EPD may revoke Tenure 5 permits if use does not begin within two years of the user receiving the permit.[14]

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[9] GA. CODE ANN. § 12-5-31(m.1)(2)(D).

[10] It is not clear how this provision will be enforced. It would be very difficult to determine if a well has been used before a meter is installed. Moreover, the code is silent as to what agency has enforcement responsibility for this provision – the EPD or the Georgia Soil and Water Conservation Commission, which coordinates the well meter program.

[11] GA. CODE ANN. § 12-3-105(b).

[12] Flint River Plan, *supra* note 8, at § I.B.

[13] GA. CODE ANN. § 12-5-31(a)(3) (surface water); § 12-5-105(a) (groundwater).

[14] *Id.* § 12-5-31(k)(6.1) (surface water); § 12-5-105(b)(2) (groundwater).

The major conditions imposed on permits with different "tenures" are presented below in Table 1. After reviewing the information in Table 1, it becomes clear that Tenure 1 permit holders are given preferential treatment in terms of all permit characteristics. Additionally, the later a permit is received, the more encumbered a permit becomes.

Table 1: Permit Characteristics of Different Permit Tenures*

	Tenure 1 Pre-7/1/88	**Tenure 2** 7/1/88 – 12/1/99	**Tenure 3** 12/1/99 – 12/31/02	**Tenure 4** 12/31/02 – 4/20/06	**Tenure 5** Post-4/20/06
Standard used for EPD's permitting decision	Pumping capacity	Reasonable use	Reasonable use	Reasonable use	Reasonable use
Annual reporting required	No	No	Surface: No GW: Yes	Surface: No GW: Yes	Surface: No GW: Yes
May be required to pay for meter	No	No	No	Yes	Yes
Can initiate use prior to meter installation	Yes	Yes	No	No	No
$250 application fee	No	No	No	No	Yes
25-year term on permit	No	No	No	No	Yes
Permit revocable for non-use	No	No	No	No	Yes, if initial use doesn't begin within 2 years
Qualifies for Flint River Basin Drought Protection Act's program	Yes	Yes	No	No	No

* Dates refer to date application received by the EPD.

While in many respects a permit's tenure seems to control the degree to which a permittee is restricted, the discussion that follows illustrates that the clear lines seemingly drawn by the law may evaporate when scarcity sets in, the very time that water users desire certainty the most. This looming uncertainty is highlighted by focusing on two questions of central importance:

Question 1: *Can the EPD modify, revoke, or in any way alter water use permits during periods of drought?*

Question 2: *Does the tenure of a permit affect the permit holder's vulnerability to any such modification or revocation?*

A close examination of three sets of laws and regulations is necessary to put these questions in proper perspective. Thus, Section II begins with an overview of relevant sections of existing laws, other than the Flint River Drought Protection Act, which is discussed separately in Section IV. Section III examines EPD policies, especially those associated with the agency's recently completed Flint River Basin Regional Water Development and Conservation Plan. Section IV describes pertinent provisions of the Flint River Drought Protection Act, with particular attention given to the EPD's rules for implementing the irrigation-reduction auction. Concluding remarks are offered in Section V, wherein suggestions are offered for alternative means by which the state might design an equitable method for reducing agricultural water use during periods of drought.

II. Implications of Georgia Water Law for the "Status" of Permits

This section focuses on the laws that govern the EPD's ability to reduce agricultural water use in times of drought or other circumstances that lead to water scarcity. In doing so, however, this section does not consider instances in which a drought has been declared by the EPD and thereby activated the Flint River Drought Protection Act. That act will be discussed in detail in Section IV. Rather, this section attempts to answer the two questions described above, under conditions when the Drought Protection Act is *not* invoked. First, can the state modify or revoke an agricultural water use permit? Second, if so, does the tenure status of a permit matter in any such action?

As explained above, many of Georgia's agricultural water users may believe that EPD has no such power and that the more senior the tenure of a permit, the more secure the permit holder's water rights are. And in fact, a review of Georgia's water law produces very few code provisions that contradict this perception. However, as discussed below, at least one code provision regarding surface water permits and a similar provision regarding groundwater permits appears to allow the EPD to modify and revoke water use permits. These code provisions provide such a substantial loophole that they cast a great deal of uncertainty onto the security of existing users' water rights.

Before turning to the issue of the EPD's power to modify and revoke permits to make way for new permittees, it is important to note that the legislature has provided the EPD the power to revisit permits to protect the health and safety of Georgians or otherwise respond in times of crisis or emergency. In the context of surface water, for example, the Georgia Code gives the director of the EPD the power to "revoke, suspend, or modify a permit for any other good cause consistent with the health and safety of the citizens of this state."[15] Similarly, the legislature has provided the EPD some power to restrict use during times of emergency.[16] While the purpose of these exceptions is understandable, the lack of clarity about what exactly the EPD should do is somewhat troubling for those seeking more certainty about water rights. For example, how specifically should the agency modify or revoke rights once it has found that water use threatens the public health or that an emergency is looming? It is unclear how a permit holder's tenure plays into the probability that the EPD will ask any particular user to cut back when the agency uses its authority provided by either of these provisions.

[15] *Id.* § 12-5-31(k)(8).
[16] *Id.* § 12-5-31(l).

However, as alluded to above, the General Assembly has created a much more substantial loophole. With respect to surface water, the EPD Director "may suspend or modify a farm use permit if he should determine through inspection, investigation, or otherwise that the quantity of water allowed under the permit *would prevent other applicants from reasonable use of surface waters for farm use*."[17] A very similar provision is found in the context of Georgia's groundwater law.[18] Taken literally, these provisions of the code appear to give the Director the power to revoke, suspend, or modify *any* existing farm use permit in order to "make room" for new applicants seeking permits to exercise their riparian rights. In isolation, these provisions seem to make a permit holder's tenure *irrelevant*. Perhaps equally troubling for Georgia water users seeking security in their water rights is that the code is silent as to how the EPD should implement this provision.

To appreciate the implications of this provision in the code, consider the following hypothetical example. Suppose there are three farmers with water use permits within a given watershed. Acreage irrigated by each and the date at which the permit was acquired are as follows:

Farmer A (1988)	3,000 acres
Farmer B (1998)	1,000 acres
Farmer C (2006)	2,000 acres

The water use by Farmers A, B, and C exhausts water supplies in the watershed, especially during drought. Farmer D, a riparian owner in the watershed, wishes to initiate the irrigation of 3,000 acres. Because the three farmers are using all the available water, the EPD Director would have to conclude that use by Farmers A, B, and C prevents this "other applicant" from reasonable use of available surface waters. Can the Director suspend or modify the exist permits to allow a new applicant reasonable use of the surface waters? The answer depends on the intent of the Georgia General Assembly and whether other legal safeguards are intended to govern the EPD decision.

With respect to legislative intent, how should the EPD evaluate "reasonable use" for new permit applications, such as Farmer D's? Is the application by Farmer D for 3,000 new acres "reasonable"? And, if not, what constitutes a "reasonable" request? From the perspective of existing water users, understanding what uses are reasonable is important because it would allow them to at least venture a guess as to whether their existing rights to use water are vulnerable to applications submitted by prospective rival users.

As one might suspect, grasping for hard and fast rules when weighing reasonableness is difficult because it is context-specific. In fact, the Georgia legislature did not even attempt to draw a clear line that can help users make reliable forecasts about how "reasonable" a use is. Rather, in determining what constitutes a "reasonable" request, the Georgia legislature relies on a multi-factor approach that includes a broad range of categories. Examples of these categories illustrate their diversity. The legislature instructed the EPD to consider, among other things, the number of users of the water resource; the physical

[17] *Id.* § 12-5-31(k)(7) (emphasis added).
[18] *See id.* § 12-5-105(b)(3).

limits of the resource; the value of proposed use; and, the all-encompassing varying circumstances of each case.[19] This broad and open analysis should make incumbent water users feel at least somewhat vulnerable that somewhere down the road some prospective user will find a way to trump the rights of some existing users, possibly himself included.

What happens if the EPD deems a request by a new user to be "reasonable." For example, in our hypothetical, if the EPD allots water to Farmer D, who then among Farmers A, B, and C, gives up water, by how much, and why? Does the EPD apply the same criteria to exiting water users as it does to the new user when it considers making room for other users? Does the permit tenure of existing users matter in this analysis? Do Tenure 1 permits receive any protections against the threat of future users? Or, are all users treated equally?

For example, if the EPD grants Farmer D water for 3,000 acres, which over-allocates the watershed, does each farmer (A, B, and C) give up equal shares of 1,000 acres? In that scenario, Farmer B would be out of business. Alternatively, do Farmers A, B, and C give up acreage that is proportional to their existing share (A gives up 50%; B gives up 16.6%; C gives up 33.3%)? Finally, does tenure matter and if so, how much? For instance, do D's needs require that Farmers B and C go out of business, leaving Farmer A, the senior permit holder, unaffected? Or, is there no magic formula and instead the EPD has great latitude to make decisions about who gives up what?

Admittedly, this hypothetical example was designed to simplify how some alternative scenarios might play out. However, the importance of the questions raised by this hypothetical is only amplified by the numerous potential water users found in most of Georgia's water basins. The dismal, yet increasingly foreseeable, situation characterized above leaves existing permit holders facing enormous uncertainty as to the long-term security of their rights to use water. This uncertainty exists even if an irrigator holds a Tenure 1 permit to irrigate lands the way he has for decades.

As unpredictable as the law governing the EPD's ability to modify and revoke existing permits seems, the uncertainty of the law is only compounded when read in relation to other statutory provisions. Arguably, other provisions of the code pertaining to the EPD's authority to issue new permits appear to undercut some of the force of the EPD's ability to modify or revoke existing permits. For example, in evaluating what constitutes a reasonable use, the EPD must also consider factors that point in the direction of protecting existing users. For example, in consideration of new permits for agricultural water users, the EPD must weigh "the extent of any injury or detriment caused or expected to be caused to other water users,"[20] "the prior investments of any persons in lands,"[21] and in the case of surface water, the EPD must heed the mandate that "granting of [a new] permit shall not have unreasonably adverse effects upon other water uses in the area, including potential as well as present use."[22]

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[19] *Id.* § 12-5-31(e)-(g) (surface water); § 12-5-96(d) (groundwater).
[20] *Id.* § 12-5-31(e)(7) (surface water); § 12-5-96(d)(7) (groundwater).
[21] *Id.* § 12-5-31(e)(9) (surface water).
[22] *Id.*

Similarly, another section of the Georgia Code provides that EPD "shall take into consideration the extent to which any withdrawals . . . are reasonably necessary . . . to meet the applicant's needs and shall grant a permit which shall meet those reasonable needs; provided, however, that the granting of such permit *shall not have unreasonably adverse effects upon other water uses in the area*."[23]

The code provision that perhaps most challenges the notion that the EPD could modify or revoke existing permits is the following: "In the event two or more competing applicants or users qualify equally [under the Code's reasonability criteria] . . . the director is authorized to grant permits to applicants *or modify the existing permits of users* . . . on a prorated or other reasonable basis . . .; provided, however, *the director shall give preference to an existing use over an initial applicant*."[24] Viewed in isolation, this section seemingly leads to the conclusion that the EPD cannot make room for other prospective users.

So, at least in isolation, these provisions of the Georgia Code create a confusing and seemingly contradictory picture. In fact, the state of the law may seem so blurry that water users may be tempted to throw up their hands at this point. Unfortunately, neither the EPD attempting to administer the law nor the courts attempting to interpret it have the luxury of walking away from the law just because it is confusing.

All is not lost, however. The legislature has made clear that in interpreting its statutes, one should "look diligently for the intention of the General Assembly."[25] One method for doing so, particularly when the law is confusing, is to "attempt to gather the legislative intent from the statute as a whole."[26] The goal, in this context, is to make the seemingly contradictory laws "harmonize and to give a sensible and intelligent effect to each part."[27]

Given the lack of agency decisions and court rulings, one can only speculate regarding how the seemingly contradictory statutory commands discussed above may be interpreted in the future. However, a reasoned guess is possible. While the most sensible reading of Georgia water law suggests that that law conflicts with itself and does not make much sense, the EPD and any reviewing court have to find a way to harmonize the laws passed by the legislature, if possible. Thus, these contradictory commands should be parsed to assure that each of the provisions remains true to the admittedly vague principle of "reasonableness" that Georgia water law embraces.[28] When the principle of reasonableness is kept in mind, the legislature seems to be requiring that the EPD make room for new users to the extent that it is reasonable, with part of this analysis requiring that, all else being equal, the EPD give preference to existing users.

Given this reading of the law, it appears that in determining whether a new user can supplant an existing user, the General Assembly gave the EPD a great deal of discretion to

[23] *Id.* § 12-5-31(g) (surface water) (emphasis added).
[24] *Id.* § 2-5-31(f) (surface water) (emphasis added).
[25] *Id.* § 1-3-1.
[26] Sikes v. State, 268 Ga. 19 (1997).
[27] Footstar, Inc. v. Liberty Mut. Ins. Co., 281 Ga. 448, 453 (2006) (*citing* Vollrath v. Collins, 272 Ga. 601, 603-604 (2000)).
[28] For a more detailed analysis, see Cummings, *supra* note 3, at Appendix A.

make judgment calls. Indeed, it is customary in Georgia to give great weight to the interpretation adopted by the administrative agency charged with enforcing the statute, when the agency's interpretation "reflects the meaning of the statute and comports with legislative intent."[29] Because the legislature provided a great number of factors for the EPD to weigh with little instruction of how much weight to give each factor, the legislature left the EPD a lot of room to chart the course for Georgia water law. The lack of guidance, however, only adds to the uncertainty facing Georgia farmers holding agricultural water use permits.

Returning to the two questions posed earlier, much uncertainty exists about the extent to which the EPD can and will make room for future users at the expense of present water users. With regards to the status of permits and the relevance of tenure, whether in a drought or not, only ambiguous answers can be gleaned from the Georgia code. Some sections suggest water rights are stable, while others suggest rights can be modified. EPD appears to have the authority to determine tradeoffs in allocation, so long as it at least considers each of the factors dictated by the legislature. Nothing in the code, however, suggests that holders of Tenure 1 permits have any sort of preferred status vis-à-vis later tenured permits in the event that the EPD wishes to reduce agricultural water use during a period of drought or issue new permits.

This observation contradicts the belief of many water users that Georgia water law somehow protects Tenure 1 permits. While permit holders of other tenures bear more burdens in applying for and maintaining their permits, nothing in the code would seemingly justify the notion that Tenure 1 permits are protected from modification as the EPD makes allocation decisions when addressing drought conditions.[30]

It can be argued that the ambiguities and inconsistencies noted above reflect gaps in the state's water laws as they relate to the notion of riparian rights, particularly that of reasonable use. In 1848, the Georgia Supreme Court clearly rejected the "natural flow" theory of riparian rights in favor of the "reasonable use" theory.[31] Under the natural flow theory, "[e]ach riparian owner on a waterbody is entitled to have the water flow across the land in its natural condition, without alternation by others of the rate of flow, or the quantity or quality of the water."[32] The rationale for the Court's adoption of the reasonable use theory of riparian rights is spelled out in *Price v. High Shoals Mfg. Co.*[33]

> If the general rule that each riparian owner could not in any way interrupt or diminish the flow of the stream were strictly followed, the water would be of but

[29] Schrenko v. DeKalb County School Dist., 276 Ga. 786, 791 (2003).
[30] However, it may not matter that this issue is not addressed directly in the code if a reviewing court were to find that the Tenure 1 are qualitatively different than other tenures of permits. A court may, in reviewing the law, determine that Tenure 1 permits are protected from modifications flowing from allocation decisions. There are plausible interpretations of Georgia law that could justify such a finding. Of course, other interpretations of Georgia law might undermine such a finding.
[31] Henrick v. Cook, 4 Ga. 241 (1848).
[32] 1 WATERS AND WATER RIGHTS § 7.02(c) (Amy K. Kelly ed., repl. vol. 2007).
[33] 64 S.E. 87 (1909).

> little practical use to any proprietor, and the enforcement of such rule would deny, rather than grant, the use thereof.[34]

The Georgia Supreme Court reaffirmed its preference for reasonable use in a 1980 case involving irrigation, *Pyle v. Gilbert*.[35] The Supreme Court made clear in *Pyle* that "each riparian proprietor is entitled to a reasonable use of the water, for domestic, agricultural and manufacturing purposes, provided, that in making such use, he does not work a material injury to other proprietors." The Georgia Supreme Court, however, provided little in the way of specifics as to what constituted a "material injury" or the competing demands of Georgia's many water users should be balanced. Indeed, the *Pyle* court, in remanding the case to a lower court, simply said that the lower court should be "looking always to see if, insofar as injunctive relief is concerned, all the uses of the creek and pond can be accommodated."[36]

And what if they cannot? A trial court grappling with this issue made the following observation: "Water rights are becoming more and more important with advancing techniques for its withdrawal and use, and there is a need for the courts or the legislature, or both, to further amplify and clarify equitable water rights between parties, particularly as those rights apply to irrigation."[37] We whole-heartedly agree. In addition, the EPD could be included, along with the courts and the legislature, as a party capable of providing water users with that much needed clarity.

In summary, there is uncertainty and ambiguity as to whether the state can modify or revoke an agricultural water use permit under existing statutes. Further, it is also unclear how the tenure status of a permit matters in such an action. Worse yet, water users are left with an indefinite understanding of their real rights to water when they need it most, under drought conditions.

III. Flint River Basin Regional Water Development and Conservation Plan

This section focuses on EPD's plan for the Flint River Basin. All regional water plans are required by law to be consistent with the statewide water plan, which was to be presented by the EPD to the Georgia Water Council on June 28, 2007.[38] The requirement for statewide planning had little impact on the development of the Flint River Basin Regional Water Development and Conservation Plan (Flint Plan),[39] however, because the Flint Plan was finalized on March 20, 2006. The Georgia Comprehensive Statewide Water Management Plan was approved on January 8, 2008, so adjustments to the Flint Plan may need to be made in the future.

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[34] *Id.* at 88.
[35] 245 Ga. 403 (1980).
[36] *Id.* at 411.
[37] *Id.* at 404 n.3.
[38] Detailed information about the Georgia statewide planning process is available at http://www.georgiawatercouncil.org/ .
[39] GA. DEP'T OF NAT. RES.ENVIRONMENTAL PROTECTION DIVISION, FLINT RIVER BASIN REGIONAL WATER DEVELOPMENT AND CONSERVATION PLAN (Mar. 20, 2006) *available at* http://www1.gadnr.org/frbp/Assets/Documents/Plan22.pdf (last visited June 11, 2009).

The Flint Plan incorporates the results of significant hydrological modeling of the Flint River Basin, with particular attention given to two, "vulnerable" sub-basins: Ichawaynochaway[40] and Spring Creek.[41] As a very general statement, the Flint Plan calls for new conservation measures and aggressive management of water resources, measures which could result in significant cut-backs. The Flint Plan suggests that the EPD plans to reduce irrigated acreage in these basins during periods of drought with reliance on the drought protection auction. For example, the Flint Plan states that "some parts of the lower [Flint River Basin (the sub-basins noted above)] have already reached their drought-year 'safe yield.' If more withdrawal permits are issued for the lower [Flint River Basin], more aggressive drought-year management strategies will have to be employed, mostly (if not exclusively) in those parts of the Basin closest to their safe yield."[42] Furthermore,

> If irrigation is decreased during a drought year by 20% of current use in Ichawaynochaway Creek and Lower Flint River[43] sub-basins, critical low-flow criteria will be met. If irrigation is decreased during a drought year in the Spring Creek sub-basin by 20%, it is assumed this will have a beneficial affect [sic] on water levels and stream ecology even though critical low-flow criteria may not be met.[44]

Not surprisingly, the inconsistency and uncertainties noted are found in the Flint Plan. In the plan's discussion of how EPD purports to follow several statutory requirements, the EPD makes the following statements, among others:

- "All legitimate requests for farm use permits must be granted in the [Flint River Basin] once the Plan is adopted."
- "EPD may issue permits for less than the amount requested by the permit applicant."
- "In issuing new permits, EPD may decrease the permitted withdrawal amounts of all other permitted users including 'grandfathered' permits."
- "EPD may initiate provisions of the Flint River Drought Protection Act during severe drought years in an effort to maintain critical stream flow."
- "EPD cannot revoke permits for non-use once initial use has commenced."[45]

While the EPD's cursory listing of Georgia's statutory requirements does not provide much in the way of concrete details, it does highlight what appear to be guiding principles and a glimpse at how the EPD will treat permit holders during times of drought. The Flint Plan suggests that the EPD fully anticipates that permit holders will give way to new applicants if an applicant proposes a use that is more "legitimate" than those holding permits. However, where that line will be drawn and what makes one use of water more "legitimate"

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[40] USGS Hydrologic Unit Code (HUC) 03130009.
[41] USGS Hydrologic Unit Code (HUC) 03130010.
[42] Flint River Plan, *supra* note 8, at § 2.5.
[43] In this case, the Flint Plan refers to the Lower Flint sub-basin, USGS HUC 03130008. However, elsewhere in the plan, the "Lower Flint River Basin" refers to the lower portion of the entire Flint Basin including sub-basins Ichawaynochaway, Spring Creek, Kinchafoonee-Muckalee, Lower Flint, and Middle Flint.
[44] Flint River Plan, *supra* note 8, at § 2.8(4).
[45] *Id.* at 52.

than another is left unsaid. At least in some respects then, these guiding principles raise more questions than they answer and compound the uncertainty of rights that exists in the code.

These principles provide a general, albeit undefined, trajectory of the EPD's intention to reduce the rights of incumbent users in times of scarcity. Like the statutory provisions, the Flint Plan includes other text that introduces even more confusion into the mix. Notwithstanding the EPD's observation that "more aggressive management strategies" may be required with the increase in water use permits in the Flint River Basin and the assertion that Georgia law allows the EPD to decrease the permitted withdrawal amount of *all* existing permitted users, the plan states that

> In considering new and existing applications for both ground-water and surface-water withdrawals, EPD will evaluate the effect of the proposed water use on existing users and stream flow, and issue the new permit in such a way that the new permit will not adversely impact stream flow or the water available to existing users.[46]

Taken literally, this language would require the EPD to refuse permit requests that impact current users. It is hard to square this language with the seemingly contradictory statutory requirement, noted in the plan by the EPD, to make room for new permits by decreasing "permitted withdrawal amounts of all other permitted users including 'grandfathered' permits."[47] This contradiction makes it very difficult to say what the EPD's plan actually is. It also seems to increase the legal risk that a court will find the Flint Plan legally impermissible. If the plan was ever challenged in court, the EPD would likely be given much deference, but this internal conflict would not particularly help the EPD's case.[48]

Additional provisions in the Flint Plan that water users may find relevant include the following:

- The EPD will no longer issue permits for proposed Floridan aquifer irrigation wells that are within 0.25 miles of another user's well (unless hydrogeologic evaluation indicates that the proposed well will not cause excessive drawdown in the other's well).

- Regardless of their location, all proposed Floridan aquifer wells will be evaluated for their effect on nearby streams and springs. Proposed irrigation wells that would draw from the Floridan aquifer within 0.5 miles of an in-channel spring or stream exhibiting a demonstrable connection with the Floridan aquifer will not be permitted if evaluation indicates that, for the stream reach closest to the

[46] *Id.* at 32.
[47] *Id.* at 52.
[48] A discussion about the deference paid to agencies administering the Legislature's commands can be found in Cummings, *supra* note 3, at Appendix A, Section II. The Working Paper also discusses plausible outcomes of a court attempting to interpret these seemingly conflicting provisions of the Flint Plan.

proposed well, the well would lower the Floridan aquifer water level to below the average stream state or decrease the discharge of the spring.

- In addition to restrictions on end-guns and other conservation requirements, newly issued surface water withdrawal permits in Spring Creek and Ichawaynochaway sub-basins are required to have low-flow protection plans, requiring a complete cessation of irrigation when discharge at the withdrawal location falls below 25% of the average annual discharge as calculated at the point based on the period of record for the nearest downstream continuous flow gauge, plus a prorated portion of the permitted amount of downstream users. While the Plan states that affected individuals will be notified by the EPD via e-mail or phone call when these conditions exist, the Plan also requires that the permit conditions be followed regardless of whether the permittee has been contacted by the EPD or not.[49]

As a part of the EPD's mandate to establish a "reasonable system of classification," the Flint Plan establishes three categories of small (HUC-12) watersheds. Such watersheds are relevant to the EPD's permitting actions and management plans. "Where necessary, and/or where data are available, permitting and management decisions will take into account site-specific conditions and local stream impacts down to a HUC-12 watershed scale."[50] These HUC-12 based areas are classified as follows:

Capacity Use Areas: includes watersheds in the Spring Creek Sub-Basin in which hydrologic models indicate decreased baseflow of more than 5 cubic feet per second (cfs) in any month of a drought year, more than 10 cfs in Ichawaynochaway Creek Sub-Basin, and more than 30 cfs in the Lower Flint Sub-Basin.

Restricted Use Areas: includes watersheds in Spring Creek where hydrologic models indicate decreased baseflow of 1-5 cfs in any month of a drought year, 1-10 cfs in Ichawaynochaway Creek Sub-Basin, and 3-30 cfs in the Lower Flint River Sub-Basin.

Conservation Use Areas: includes watersheds in which hydrologic models indicate decreased baseflow of less than 1 cfs in any month of a drought year in Spring Creek and Ichawaynochaway Creek Sub-Basins and less than 3 cfs in the Lower Flint River Sub-Basin.

The area classifications are designed to assist in targeting management actions within the watershed, including the suspension of water withdrawals. The relevance of these provisions is discussed in the next section.

In summary, the EPD's plan for the Flint River Basin echoes and adds to the statutory provisions concerning water management. Moreover, it compounds the uncertainty about the security of water rights and how future water management actions will affect existing and future water users, especially in the Flint River Basin.

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[49] It seems to us that this provision will be *very* difficult to implement and/or enforce.
[50] Flint River Plan, *supra* note 8, at 30.

IV. The Flint River Drought Protection Act

The Georgia General Assembly enacted the Flint River Drought Protection Act during the 2000 legislative session and revised it during the 2006 legislative session. The basic purpose of the Act was to provide the EPD with a mechanism for reducing acreage under irrigation in the Flint River Basin during periods of severe drought. The Flint River Drought Protection Act has several key features. First, in order to activate the statutory provisions of the Act, the Director of the EPD must declare a "severe drought" for the upcoming summer by the first of March.[51] In making this finding, the Director can rely on historical, mathematical, and meteorological indicators. Second, if the Director declares a drought, then he or she must also determine the acreage that must be taken out of irrigation to protect the Flint River.[52] Third, the Director then oversees an "auction-like" process designed to reduce use of the Flint River in accordance with EPD's previous acreage reduction determination. The auction is a voluntary program wherein farmers agree to not irrigate for the balance of that year in exchange for a given amount of money (per acre).[53] Fourth, if the Director is unable to acquire the target acreage in the auction, permitted irrigation may be involuntarily suspended for the year on a last-in/first-out basis; i.e., permits with the most recent issuance date would be suspended first, with the EPD then working backwards through the permit application dates until the target acreage reduction is achieved.[54]

Funding for the Act, which is critical both for the auction and for the involuntary suspensions as set forth by the Act, is "guaranteed" only through the following statement of legislative intent:

> The General Assembly intends for the total maximum balance of the unexpended drought protection funds during any fiscal year not to exceed $30 million. In the event the total balance of unexpended drought protection funds at the end of a fiscal year is less than $5 million, it is the intent of the General Assembly that the total balance of unexpended drought protection funds be replenished to at least $10 million *at the earliest possible time*.[55]

The EPD issued a number of rules that added some detail to the basic structure of the Flint River Drought Protection Act.[56] Perhaps the most fundamental addition to the Act were the rules that determine eligibility for participation in the auction[57] and the rules that exclude

[51] GA. CODE ANN. § 12-5-546(a).
[52] *Id.* § 12-5-546(b).
[53] *Id.*
[54] *Id.* § 12-5-547.
[55] *Id.* §12-5-541 (emphasis added). Given the potentially high costs of implementing the auction and Georgia's increasingly urban population, it is simply not clear what fund replenishment "at the earliest possible time" might mean to the growing number of legislators representing these urban areas.
[56] GA. COMP. R. & REGS. Chapter 319-3-28 (Flint River Drought Protection).
[57] *Id.* 391-3-28.05(b).

permittees who applied for permits after December 1, 1999 from potential involuntary suspension.[58]

This exclusion has dramatic potential implications for Tenure 1 farmers. Only farmers with pre-December 1, 1999 application dates are subject to the auction proceedings and, more importantly, involuntary suspension of their irrigation permits. This exclusion appears to detract from the legislative intent of the Act, which was to provide protection to farmers with more senior tenures of permits. Instead, under the EPD rules, Tenure 1 permittees are protected from involuntary reductions in irrigated acreage only to the extent that they can be accommodated by focusing involuntary reductions on permittees with application dates between July 1, 1988 and December 1, 1999.

The first auction under the Act was held in March 2001. That summer, more than 33,000 acres of Lower Flint River Basin were voluntarily suspended. During the 2002 auction, approximately 41,000 acres were voluntarily suspended. Since the lifting of the permit moratorium in March 2006, new withdrawal permits have been and are being issued. Processing the backlog of over 1,100 permit applications that accumulated during the moratorium could result in new permits for up to 100,000 irrigated acres.[59] In addition, the EPD may now consider applications for new permits. In the Flint River Basin, both the backlog permits and the newly issued permits are excluded from involuntary suspension or revocation due to over-allocation or drought under the Act.[60] As new withdrawals are permitted, the protection that the last-in/first-out provision of the Drought Protection Act provides to Tenure 1 permittees becomes severely limited.[61]

The EPD has also issued a number of rules that flesh out how it might target particular areas in the Flint River Basin in order to meet its water management objectives. These rules allow it to target "affected areas" for auction, specifically providing that it can focus on specific watersheds and groundwater permits "within 3 miles adjacent to the Flint River or its tributaries where . . . withdrawals may directly decrease stream flow."[62] This focused approach, while perhaps smart from a policy standpoint, only increases the possibility that more senior tenured permittees will be affected by future EPD involuntary suspensions.

As discussed above in Section III, the EPD has stated the agency's intention in the Flint River Plan to reduce withdrawals during a drought by 20% in the "vulnerable sub-basins" of the Ichawaynochaway and Spring Creek. To appreciate how the EPD's approach may impact water users, some data has been compiled for illustrative purposes in Tables 2

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[58] *Id.* 319-3-28.09 (read in light of "Permittee" as defined in 319-3-29.02).

[59] Flint River Plan, *supra* note 8, at 41, Table 1.1.

[60] GA. CODE ANN. § 12-5-543(b)([1)(A) provides that only permits with application dates prior to December 1, 1999 can participate in the Drought Protection auction. Note, however, that outside of the Drought Protection Act, new permits (Tenure 5) for surface water use in the Spring Creek and Ichawaynochaway Creek sub-basins are interruptible without compensation (*see* Flint River Plan, *supra* note 8, at 35), and it would seem that restrictions on new groundwater permits for taking water from the Floridan aquifer will be much more restrictive than in the past. *Id.* at 23.

[61] Due to the dramatic change the exclusion of new permittees has created for implementation of the Flint River Basin Drought Protection Act, it might not hold up if challenged in court. This issue is addressed in additional detail in Cummings, *supra* note 3, at 52-57.

[62] GA. COMP. R. & REGS. 391-3-28.05(a).

through 6.[63] As Table 2 shows, Ichawaynochaway has 394 surface water permits with 62,429 permitted acres and 468 groundwater permits with 63,691 permitted acres. The EPD's Flint River Plan and subsequent rule changes give particular emphasis to concern with water use within a 3-mile "buffer" along Ichawaynochaway Creek. Surface and groundwater acreage included in this 3-mile buffer and acreage in the three area classifications (Capacity Use, Restricted Use, and Conservation Use) are also provided in the table. As Table 3 shows, Spring Creek has 96 surface water permits with 12,897 permitted acres and 1,077 groundwater permits with 137,055 permitted acres.

Table 2: Water Use Permits: Ichawaynochaway Sub-Basin

	Total Number of Permits	Permitted Acreage
Surface water	394	62,429
Surface water, within 3-mile buffer	285	49,430
Capacity	15	1,265
Restricted	11	6,209
Conservation	259	41,956
Groundwater	468	63,691
Groundwater, within 3-mile buffer	296	38,849
Capacity	70	7229
Restricted	7	590
Conservation	219	31,030

Table 3: Water Use Permits: Spring Creek Sub-Basin

	Total Number of Permits	Permitted Acreage
Surface water	96	12,897
Surface water, within 3-mile buffer	85	11,210
Capacity	8	703
Restricted	9	1,030
Conservation	68	9,477
Groundwater	1,077	137,055
Groundwater, within 3-mile buffer	1,000	127,427
Capacity	261	31,340
Restricted	291	36,105
Conservation	448	50,082

It is unclear whether the EPD's stated policy of reducing withdrawals in these two sub-basins by 20% during periods of drought refers to total permitted acreage or only to acreage within the 3-mile buffer zone. If the 20% reduction were based on total acreage, the EPD would need to retire 25,224 acres in Ichawaynochaway and 29,990 acres in Spring Creek for a total of 55,214 acres. If the 20% reduction was limited to lands within the 3-mile buffer, the EPD would need to retire 17,656 acres in Ichawaynochaway and 27,727 acres in Spring Creek for a total of 45,383 acres. It is interesting to note that during the 2002 auction, only 8,277 of Ichawaynochaway's 49,430 permitted surface water acreage and 3,013 of Spring Creek's 11,210 permitted surface water acreage in the 3-mile buffer zone were voluntarily

[63] Data shown were compiled using ESRI ArcGIS based on the agricultural water withdrawal permit database as of December 2006. The data were made available to the authors by the Georgia EPD. Given the dynamic nature of the database involved, it is anticipated that some minor changes have occurred in the numbers since the analyses were performed.

suspended. Thus, the acquisition of more than 45,000 acres in these sub-basins is likely to require prices well in excess of the $150.00/acre offer price used in the 2002 auction.

If the area classifications are not relevant, the EPD could obtain its targeted acreage entirely from surface permits.[64] However, if suspension decisions are based on the classifications, the implications for Tenure 1 permittees are substantial. Consider, for example, the Ichawaynochaway Creek Sub-Basin.[65] Virtually all surface water permits in the Capacity and Restricted Use areas and more than 85% of surface water permits in the Conservation Use areas are Tenure 1 permits.[66] Obtaining targeted acreage solely from surface water would necessarily require that large acreages of Tenure 1 permits be voluntarily or involuntarily suspended. With the addition of groundwater permits, as shown in Tables 4 through 6, the bulk of permits in the Capacity and Restricted Use area classifications, those most likely to be suspended, are still in the hands of Tenure 1 farmers. Similar conditions are found in the Spring Creek Sub-Basin. As a result, the bulk of permits to be retired, either voluntarily through the auction or involuntarily suspended, would have to come from Tenure 1 farmers.

Table 4: Ichawaynochaway: Auction-eligible Permits within Capacity Use Classification.

	Permits Within 3-mile Buffer							
	Surface water				Groundwater			
Year permit issued	number of permits	acreage	cumulative acreage	% total	number of permits	acreage	cumulative acreage	% total
1988					1	103	103	1
1989	5	284	284	22	2	162	265	4
1990	4	338	622	49	12	1,237	1,502	21
1991	1	99	721	57	12	1,313	2,815	39
1992	5	544	1205	100	24	2,692	5,507	76
1993			1205	100			5,507	76
1994			1205	100			5,507	76
1995			1205	100	1	154	5,661	78
1996			1205	100			5,661	78
1997			1205	100	1	50	5,711	79
1998			1205	100			5,711	79
1999			1205	100	1	114	5,825	81
2000			1205	100	13	1,184	7,009	97
2001			1205	100	2	165	7,174	99
2002			1205	100	1	55	7,229	100
2003			1205	100			7,229	100

[64] It seems reasonable to assume that the EPD would look first to surface permits given that their retirement would have a larger and more certain effect on surface water supplies than the suspension of groundwater permits.

[65] Note that Tables 4 through 6 assume that EPD would seek to attain a 20% reduction in permitted withdrawals only within the 3-mile buffer.

[66] It is important to note that grandfathered permits include those for which applications were submitted prior to July 1, 1991 and were based on water use that had taken place prior to July 1, 1988. Tables 4 through 6 list the issuance date of permits, but not the application date. Application date data were not available. The EPD had a backlog of applications of Tenure 1 permits which took several years to process. For the purposes of this analysis, we estimate that most permits issued in 1995 or before are Tenure permits, but it is possible that some were issued even later than 1995.

Table 5: Ichawaynochaway: Auction-eligible Permits within Restricted Use Classification

	Permits Within 3-mile Buffer							
	Surface water				Ground water			
Year permit issued	number of permits	acreage	cumulative acreage	% total	number of permits	acreage	cumulative acreage	% total
1988								
1989	6	4,719	4719	76				
1990			4719	76	1	57	57	10
1991	2	1,306	6025	97	6	533	590	100
1992	1	103	6128	99			590	100
1993			6128	99			590	100
1994			6128	99			590	100
1995			6128	99			590	100
1996			6128	99			590	100
1997			6128	99			590	100
1998			6128	99			590	100
1999			6128	99			590	100
2000	2	81	6209	100			590	100
2001			6209	100			590	100
2002			6209	100			590	100
2003								

Table 6: Ichawaynochaway: Auction-eligible Permits within Conservation Use Classification.

	Permits Within 3-mile Buffer							
	Surface water				Ground water			
Year permit issued	number of permits	acreage	cumulative acreage	% total	number of permits	acreage	cumulative acreage	% total
1988	11	2,293	2293	5	13	2,554	2,554	8
1989	82	14,292	16585	40	35	6,115	8,669	28
1990	45	6,374	22959	55	33	5,437	14,106	45
1991	75	11,403	34362	82	58	7,259	21,365	69
1992	7	905	35267	84	17	2,145	23,510	76
1993	2	473	35740	85			23,510	76
1994	2	668	36408	87	1	101	23,701	76
1995	3	483	36891	88	1	187	23,888	77
1996	1	44	36935	88	1	182	24,070	78
1997	1	150	37085	88	2	188	24,258	78
1998	2	230	37315	89	3	400	24,718	80
1999			37315	89	2	215	24,993	80
2000	22	3,832	41147	98	43	5,176	30,109	97
2001	2	412	41559	99	5	526	30,635	99
2002	3	346	41905	100	4	389	31,024	100
2003	1	51	41956	100	1	6	31,030	100

Georgia law is silent on the question as to what will happen in the event that a drought is not declared on March 1, but in fact occurs after that date. There are no provisions for a post-March 1 declaration that would trigger an acreage reduction auction. In such a

scenario, if the EPD finds that acreage reduction is required to protect the river, involuntary suspension would seem to be their only recourse. That possibility raises a number of questions. Whose acreage would be suspended? What procedures would be adopted by the EPD in implementing any required suspensions in the absence of the Drought Protection Act process? If a drought is not declared, the EPD might rely on its more general authority to modify permits, discussed above in Section III. If so, that leaves water users with substantial uncertainty.[67]

V. Conclusion

At the beginning of this article, two questions of paramount importance to Georgia's farming sector were posed. First, can the EPD modify, revoke, or in any way alter water use permits during periods of drought? Second, does the tenure of a permit affect the permittee's vulnerability to any such modification or revocation? State law, EPD regulations, and case law provide only ambiguous answers to these questions.

Permittees may not have the clear rights to water that they believe that they have. Their rights are riddled with legal uncertainties. A dilemma is emerging in the Georgia water law regime. As the state tries to comport with the principles of riparian rights, conditions of scarcity, such as during a drought, make such a commitment untenable. Existing laws leave the EPD in a "damned if they do; damned if they don't" position. The EPD faces a certain amount of litigation risk no matter how it attempts to reconcile the laws of the state with respect to water use management. Moreover, as conditions of scarcity become more frequent, the risk of litigation will only increase.

This article does not advocate the adoption of a prior appropriation system for the state of Georgia. Nor does it in fact advocate any particular solution to the uncertainties found in Georgia's water law. However, it calls for support for the clarification of the law to reduce uncertainty about future access to water for permit holders. The riparian doctrine, *as traditionally applied*, is not well suited for guiding water use under conditions of scarcity. Modifications are needed to clarify the rights and responsibilities of permittees during periods of drought or pronounced demand. The state needs to rationalize its water laws in order to eliminate inconsistencies in its current laws and to clarify legislative intent as to how water resources are to be managed. Under the current framework, too much is left to chance and is almost virtually certain to lead to costly and protracted litigation.

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[67] It is important to note that in addition to the uncertainty raised by the statutory and regulatory language, any number of the provisions of the Drought Protection Act, such as those related to a farmer's property right in a permit, may be subject to challenge in the courts. The basis for such a challenge could be a provision of the Georgia Constitution which does not permit amendment of laws of general application by "special" laws. Article VI, ¶ IV(a) of the Constitution states that "Laws of a general nature shall have uniform operation throughout this state and no local or special law shall be enacted in any case for which provision has been made by an existing general law, except that the General Assembly may by general law authorize local governments by local ordinance or resolution to exercise police powers which do not conflict with general laws." A reviewing court relying on this provision could find that at least portions of the Flint River Drought Protection Act are "special" laws, which cannot amend more general laws such as Georgia's surface water and groundwater laws.

Along these lines, Georgia may wish to consider the need to quantify the amount of water that a permittee is entitled to withdraw. To date, agricultural withdrawal permits in Georgia have not specified this amount. Other riparian states, such as Oregon and Texas, have taken such action when they began to grapple with conditions of scarcity, similar to what Georgia is now experiencing.[68] In these states, riparians property owners were given a fixed amount of time to provide documentation of their water use over the previous four-to-five years, and these data were used to quantify their riparian rights. Existing permits issued by the EPD already specify the acreage that can be irrigated under the permit. Therefore, to implement this recommendation an additional datum simply needs to be added to the permit. Quantified rights under a water use permit offers several advantages, including supporting the EPD in reducing water use during a drought on an (arguably) "fair" basis. For example, all users could be required to reduce water use by 10% of their permitted amount. These limits would be enforceable once the state's program to install meters on all agricultural wells, which is projected to be completed in 2009, comes on-line.

In conclusion, several closely related questions are posed that can help facilitate discussion among policymakers and stakeholders in the state. Responses to these questions could help to guide the development of substantive improvements in the state's water laws.

1) *Should the state continue to allow expansion of irrigated acreage in basins like the Flint River Basin where over-appropriation (during periods of drought) is already a reality?*

If yes, then the state would be well advised to initiate plans for how they might respond to the likelihood of litigation claiming the state's abrogation of its obligations to downstream states. If no, the state would benefit from the provision of explicit guidance to the EPD as to restraints on the issuance of new permits.

2) *Closely related to the above, do we want a system wherein any riparian owner can obtain a right to water use, even if this means that existing water users must reduce their established use?*

If yes, then the law needs to provide more explicit guidance on how existing permits can be modified to accommodate new users. Should each permit holder, regardless of permitted acreage, cede the same amount of water which will, in total, offset the water use of the new permit application? Is the reduction pro-rated on a per-permitted-acre basis? Does the tenure of a permit affect the amount of reduction required; i.e., does the holder of a permit issued in the 1980s give up the same or a lesser amount that the holder of a permit issued in the 1990s? Is there a limit on the riparian claim of a new applicant; i.e., can a new applicant assert a riparian claim for water required to irrigate thousands of acres? Will compensation be given to existing permit holders pushed aside for new users?

[68] *See* RONALD G. CUMMINGS, NANCY A. NORTON, AND VIRGIL A. NORTON, GEORGIA WATER PLANNING AND POLICY CENTER, ENHANCING IN-STREAM FLOWS IN THE FLINT RIVER BASIN: DOES GEORGIA HAVE SUFFICIENT POLICY TOOLS?, Water Policy Working Paper #2001-002 (Sept. 2001), *available at* http://www.h2opolicycenter.org/pdf_documents/water_workingpapers/2001_002.pdf (last visited June 30, 2009).

If no, then existing provisions that require that the EPD issue new permits for irrigation and sections of the law cited above that require modification of existing permits to accommodate new applicants should be changed.

3) *Should the state give any sort of preferential treatment to different tenures of permits; i.e., does a farmer who has had a permit for twenty-plus years have the same standing in any acreage reduction scheme as one who acquired a permit later? Related to this question, should holders of permits obtained after December 1, 1999 be excluded from the Flint River Drought Protection Act irrigation suspension auction and provisions for the involuntary suspension of permits?*

If the answer to the first question is yes, then explicit language to this effect in Georgia's water laws would resolve ambiguity created by conflicting requirements to accommodate new users and to protect existing permit holders. If the answer is no, then explicit language to this effect would remove a great deal of uncertainty from Georgia's water laws.

4) *Similarly, should the law provide more explicit guidance as to how the EPD should attain irrigation reductions when the Drought Protection Act is not invoked but drought conditions exist (i.e., when a drought is not declared by March 1 and severe drought conditions follow or if acreage reductions attained voluntarily by auction under the Act later prove to be inadequate)?*

If yes, then the law should provide specific guidelines for the identification of farmers whose permits may be suspended. It must make clear whether the tenure of a permit "counts" in this regard. If the answer is no, then, it would still be helpful if at least the rules used by the EPD were made more explicit. Prior to adoption, any rule changes should be fully debated by affected stakeholders.

5) *Should the state begin the process of quantifying amounts of water use allowed under an issued water use permit?*

If yes, then policymakers should give consideration to the process that they wish the EPD to follow in quantifying permitted water use. If no, then, obviously, no action is required.

While considering these important questions, policymakers must also consider the external context for these concerns. In this case, the external context tends to further muddy the waters. First, federal laws add a new layer of complexity and uncertainty. The continuing conflict among Georgia, Alabama, and Florida concerning waters in the Appalachicola-Chattahoochee-Flint Basin (ACF) could result in federal actions, such as an equitable apportionment action, that could unpredictably affect water resource allocation in the region. The federal Endangered Species Act is also relevant given the presence of multiple federally listed species in the watershed, including endangered freshwater mussels and Gulf sturgeon. Other possible challenges to the rights of Georgia water users could arise based on the Clean Water Act or provisions of state common law, such as the public trust doctrine. In significant respects, those watching developments in Georgia water law are waiting for the proverbial "other shoe" to drop and potentially turn Georgia's treatment of water rights completely on its head. A potential interstate challenge to Georgia's

management of the Flint Basin or the larger ACF based on federal law adds additional uncertainty to Flint Basin permittees rights to use water.

Second, Georgia is currently developing a new statewide water plan to guide its management of water resources across the state. The draft plan was presented to the Georgia Water Council in the summer of 2007, and passed by the state legislature during its 2008 session. The plan suggests a number of new policies for water resource management in the state. Perhaps the most significant with respect to the issues discussed in this article is the proposal to manage watersheds based on "consumptive use assessments," which aim to allocate available water to various users, in-stream flows, downstream needs, and assimilative capacity with clear numerical targets. Additionally, the plan proposes the use of regional entities to coordinate water management planning at the sub-state level. A shift to regional management of watersheds could significantly change water policy in this state, but it also might not. Until the details of implementation are known, the impact is uncertain. Thus, the new statewide plan could change the direction of current state water policy, and therefore, while the plan and its implementation details are still incomplete, water users face additional uncertainty over how future water management and allocation policies will affect them.

Georgia water policy is at a crossroads. This article is offered as a starting point for assessing the current water statutes and regulations that affect agricultural water users in Georgia. This analysis suggests that the current policies are confusing, even contradictory. Moreover, they do not appear to be up to the task of addressing current conditions of scarcity, and they create uncertainty for permit holders over what actual rights they have to water to support their farm operations.

Georgia is currently endeavoring to develop revised policies to manage water resources in the state. As it does, discussion of these issues should be central. If the state does not address these issues soon, it will face decisions that are more difficult and choices that are more constrained, and if it waits too long, decisions may be made for it in a court of law.

Preparing for Apportionment: Lessons from the Catawba River

Mark Davis[1]

"A river is more than an amenity, it is a treasure."
Justice Oliver Wendell Holmes, Jr.[2]

I. Introduction

The history and development of the lower Mississippi River Valley states has been closely linked to their relationships with rivers and water. The same will be true for their futures. Environmental, agricultural, energy, and transportation pressures are already forcing changes to the ways rivers and groundwater resources are viewed, managed, and used. Beyond that, growing populations in drier western states, drought cycles, and concerns over the effects of climate change are already spurring interest in diverting water from rivers, including the Mississippi. In short, there is a growing gap between where freshwater is and where it is wanted. Balancing the rights, duties, and needs of the various players is an increasingly high stakes game.

As competition for these water resources grows, riparian states will need to be prepared to assert their rights to and need of those resources in a clear, prompt, and forceful manner if they wish to benefit from what some are describing as the emerging "water economy." They also should anticipate more collaborative regional approaches to managing interstate waters. Those voluntary collaborative efforts should be encouraged, but if the history of American water law teaches anything it is that there are limits to just how far voluntary collaboration can take us. At some point the respective rights of states and their citizens tend to need to be clarified or fixed, and in this realm that task falls on the federal government either through interstate compacts, direct congressional apportionment, or judicial apportionment. Compacts are voluntary, judicial apportionments are not. Compacts are negotiated agreements that through Congressional approval take on both the characteristics of contracts and enforceable federal law. Congressional apportionment is a potentially powerful vehicle for allocating water resources, but it is something Congress has shown little appetite for using.[3] Judicial apportionments, almost by default, are the realm

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[2] From Justices Holmes's opinion in *New Jersey v. New York*, 283 U.S. 336, 342 (1931).

[3] Congress's power to allocate rivers as an incident of its Commerce Clause power was only made clear in 1963 in *Arizona v. California*, 373 U.S. 546 (1963), in which the Supreme Court found that the Boulder Canyon Project Act worked a complete statutory apportionment of the Colorado River.

where the thorniest conflicts over water are sorted out. These are creatures of equity and federal common law which makes their outcomes unpredictable and their initiation something of a gamble. But as conflicts over water heat up it is likely that judicial apportionment will be a gamble increasingly worth taking by some states. That certainly is what South Carolina concluded when it filed suit against North Carolina seeking an equitable apportionment of the Catawba River. The case, *South Carolina v. North Carolina,*[4] is currently pending before the Supreme Court of the United States, having been accepted by the Court as an original jurisdiction case.

The development and outcome of the case will be instructive to states well beyond the Carolinas as they consider how to frame and pursue their rights and interests to the waters of their interstate rivers, not the least of which would be the Mississippi River and its tributaries. If the prospect of apportioning rivers (by judgment or compact) was not intriguing enough, there is the very real prospect that multistate aquifers will be brought into the future mix as well.

II. Divvying up the Catawba: *South Carolina v North Carolina*

The Catawba River rises in the mountains of western North Carolina flowing southward some two hundred miles into South Carolina where it joins the Wateree River and later the Santee River before ultimately reaching the sea north of Charleston. As rivers go, the Catawba River is not one of our most storied. It has not been etched into American consciousness through songs and poems. Painters have been less attentive to it than they have to the Hudson, the Ohio, and even the Delaware Rivers. And the struggles to control and manage it have not been as iconic as those over the Mississippi, Missouri, and Colorado Rivers.

The river may not be famous, but it is an important river. Important to the communities, including the City of Charlotte, that depend on it for their water supply. Important to growing communities that see it as a future source of water supply. Important to the power plants that depend on it as a source of cooling water. Important to those who care about the health of our nation's rivers.[5] And important to anyone interested in the rules by which America's water resources will be apportioned and prioritized in the future.

Prior to that time it was often assumed (based in part on earlier U.S. Supreme Court precedent, specifically *Hudson County Water Co. v. McCarter*, 209 U.S. 349 (1908) and *Kansas v. Colorado*, 206 U.S. 46, 85-95 (1907)) that state-owned waters were beyond the reach of federal control except for protecting and promoting navigation and to equitably determine the rights of states to intrastate resources. *See, e.g.*, DAN TARLOCK, LAW OF WATER RIGHTS AND RESOURCES § 10:28.

[4] U.S. Supreme Court case number 06-138, Original. An electronic docket for this case is available at http://www.mto.com/sm . The orders and other proceedings referred to in this paper pertaining to this case are available on that website.

[5] The conservation organization American Rivers named the Catawba-Wateree River as the most endangered river in America in 2008. *See* AMERICAN RIVERS, AMERICA'S MOST ENDANGERED RIVERS (2008), *available at* http://www.americanrivers.org/assets/pdfs/mer-past-reports/MER_Report2008optb969.pdf (last visited June 12, 2009).

The case was filed by South Carolina after efforts to reach a negotiated multi-state compact to govern the management of the river failed. In its petition, South Carolina asks the Supreme Court to use its equitable powers to allocate the river between the two states.

At the heart of the dispute is the impact of transferring water from the Catawba River to a separate river basin.[6] In 1991, North Carolina promulgated the Interbasin Transfer Statute, allowing for the withdrawal of surface water from one river basin and its subsequent discharge into another river basin. Under the statute, if the transfer meets or exceeds 2,000,000 gallons of water per day, then a permit must be issued by the North Carolina Environmental Management Commission (EMC). Any transfers less than this amount are implicitly authorized, at least in the view of South Carolina, without any approval or oversight. In making its determination to grant a permit, the EMC must consider the necessity, reasonableness and beneficial effects, among other things, of the transfer with regard to North Carolina's interests.[7] Importantly, there is no provision requiring an assessment of the impacts upon a downstream state, even during times of drought when a North Carolina interbasin transfer from the Catawba River is likely to limit the amount available to users downstream in South Carolina.

The suit was filed in June of 2007 and a Special Master, Kristin Linsley Myles, was appointed to administer the case. The case has been divided into two phases. Phase I will focus on whether South Carolina can show that it has been harmed. Assuming harm is established in Phase I, Phase II will address the issue of equitable apportionment of the River.

Adding to the importance (not to mention the color and complexity) of the case is the inclusion of three defendant interveners and the interplay between the apportionment case and the ongoing Federal Energy Regulatory Commission (FERC) relicensing process of the eleven reservoirs owned and operated by Duke Energy Carolinas, LLC (Duke Energy) on the Catawba.[8] The decision of the Special Master to allow the City of Charlotte, the Catawba River Water Supply Project, and Duke Energy to intervene breaks new legal ground that could significantly affect the way equitable apportionment cases are framed and conducted. The question of whether the interventions were properly granted is now pending before the Supreme Court based on exceptions filed by the State of South Carolina.[9] The issue of who can and cannot be parties to apportionment suits will be discussed in more detail a bit later in this article. At this point, the important point to keep

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[6] Most notably the North Carolina Environmental Management Commission has issued permits to the Charlotte-Mecklenburg Utilities and the Cities of Concord and Kannapolis to transfer up to a total of 43 million gallons of water per day from the Catawba. Unsurprisingly, North Carolina's view of the situation is different. While not denying that there have been reductions in the flow of the Catawba, North Carolina argues that they are caused by severe drought conditions rather than any acts on its part. *See*, First Interim Report of the Special Master, South Carolina v. North Carolina, No. 138, Original, at 5-6, (Nov. 25, 2008.)

[7] N.C. GEN. STAT. § 143-215.22L(k).

[8] Six of these reservoirs are located in North Carolina, four are in South Carolina, and one is located on the border between the two states. *Id.* at 3.

[9] Exceptions of the State of South Carolina to the First Interim Report of the Special Master were filed in the Supreme Court of the United States on February 13, 2009. These exceptions have been supported by the United States in an amicus curiae brief filed with the Court in February of 2009.

in mind is that there is no cookbook for how these cases develop and are decided. These are complex cases that touch many interests and that can, and do, turn on the facts and circumstances of each case and the interplay and evolution of state and federal laws. Regardless of how the Court rules on the exceptions and final merits of this case, the value of this case to other riparian states will lie in its instructive qualities as to the elements of an equitable apportionment case in today's world, particularly in the eastern half of the United States.[10]

III. Equitable Apportionment: Basic Elements and Applicable Law

Equitable apportionment is a doctrine of federal common law that governs disputes between states over their respective rights to use interstate streams (and arguably other interstate waters).[11] The U.S. Supreme Court has original jurisdiction over these cases by virtue of Article III, §2 cl. 2 of the U.S. Constitution.

Whether the Court accepts an apportionment case is a matter of discretion, not of right.[12] Traditionally, the Court has taken these cases only sparingly, with its first decision coming only in 1907.[13] Between 1945 and 1982, no equitable apportionment decisions were issued.[14] There are several reasons for this reluctance, including a preference for resolving multi-state disputes in other forums, concerns about undercutting the immunity afforded to states by the Eleventh Amendment against suits brought by citizens of other states, as well as concerns about ripeness. There is also the simple truth that these are complex cases that do not often lend themselves to the clear cut sort of dispute resolutions that judicial proceedings tend to favor.[15]

Needless to say, this is tricky territory for the Court to enter. While there are no hard and fast rules that govern the Court's decision to take and rule on a case, there are three principles that seem to consistently stand behind the Court's actions:

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[10] The Supreme Court has been very sparing in exercising its authority and discretion in taking and ruling on equitable apportionment cases and other original jurisdiction cases. *See*, Utah v. U.S.*,* 394 U.S. 89 (1969). Since the 1930s the overwhelming preponderance of equitable allocation jurisprudence has dealt with water disputes in western states which largely jettisoned riparian legal theory in favor of various versions of the prior appropriation doctrine for establishing and prioritizing water use rights.

[11] Colorado v New Mexico, 459 U.S. 176 (1982).

[12] The Court also has broad discretion over how an equitable apportionment case is shaped by controlling who may be a party to the action and the range of disputes issue to be considered. For a broader discussion of Court's discretion in original jurisdiction cases, *see* V.L. McKusick, *Discretionary Gatekeeping: The Supreme Court's Management of Its Original Jurisdiction Docket Since 1961*, 45 ME. L. REV. 185 (1993).

[13] Kansas v. Colorado, 206 U.S. 46 (1907).

[14] *See*, Tarlock, supra note 3, at § 10:19.

[15] This point was candidly made by the Court in *Colorado v. Kansas* where Justice Robert wrote "The reason for judicial caution in adjudicating the relative rights of States in such cases is that, while we have jurisdiction of such disputes, they involve the interests of quasi-sovereigns, present complicated and delicate questions, and due to the possibility of future change of conditions, necessitate expert administration rather than judicial imposition of hard and fast rule." 320 U.S. 383, 391 (1943).

1) There must be a bona fide dispute over interstate water between two or more states;[16]
2) The injury to the petitioning state must be serious and clearly established;[17] and
3) All riparian states have the right to a "fair share" of an interstate stream and are viewed as equals in the eyes of the Court.[18]

Historically, the Court has shown a degree of permissiveness in allowing states to file equitable apportionment suits, allowing the facts of the dispute and the evidence of injury to be developed before a Special Master. That permissiveness has not translated into relaxation of the strict standards that must be met to win one these suits. But what are those standards? Perhaps the best way to approach that question is by considering the following questions.

What Waters are Subject to Apportionment? At the core of all equitable apportionment cases is a dispute among riparian states over some interstate water. Traditionally, this has meant surface streams and their tributaries. Whether it also applies to disputes over interstate groundwater is presently not resolved, though the better view is that it does.[19]

Whose Party is It? (Bringing and Defending Apportionment Actions). Only states, as quasi-sovereigns, have the right to seek apportionment. The right does not extend to political subdivisions nor to the citizens of a state. As discussed earlier, the Eleventh Amendment prohibits citizens of one state from suing another state in federal court. This can be a troublesome matter where water disputes are concerned since, invariably, what is at stake are the water uses or planned uses of a petitioning state's citizens. To permit a state to merely channel the claims of those citizens would effectively undermine the Eleventh Amendment, clearly not something to be countenanced.

On the other hand, the well-being of a state is clearly tied to the uses to which its citizens put that state's waters. To deny states an effective means of redressing injuries to the waters relied on by its current and future citizens would undermine the role of states as quasi-sovereigns and trustees of public resources and public health and welfare, which is not something to be lightly countenanced.

A solution to this dilemma has been found in the doctrine of *parens patriae*. Under this doctrine, the Court has allowed states in their quasi-sovereign status to bring original

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[16] It is clear that the Court requires more than the abstract assertion of a right by a state or the advancement of the interests of a state's citizens who are mere users of water. In *Kansas v Colorado*, the Court in rejecting Kansas's petition noted that it was not enough to assert some technical right to water but rather one that would produce actual benefits to offset the negative impacts on Colorado. 185 U.S. 125 (1907) (analyzed in Colorado v Kansas, 320 U.S. 383, 385 (1943)). The need for a case to involve state interest beyond those of its citizens is attributable in part to preventing apportionment suits from serving as the equivalent of a class action suit that would otherwise be barred by the Eleventh Amendment. For a more thorough discussion of these points, *see* Tarlock, *supra* note 3, §§ 10:7-10:14.

[17] *See, e.g.,* Connecticut v Massachusetts, 282 U.S. 660 (1931)

[18] *See, e.g.,* Kansas v. Colorado, 206 U.S. 46, 100 (1907); Connecticut v. Massachusetts, 282 U.S. 660, 670 (1931); Colorado v. Kansas, 320 U.S. 383, 385 (1943). *See also*, Tarlock, *supra* note 3, § 10:2.

[19] *Id.* at § 10:6.

jurisdiction actions based on the premise (some might say the fiction) that the state is asserting broader interests of all the state's citizens over and above and beyond those of the users of the disputed water.[20] These would include the broader interests of all of the state's citizens and future generations. They can also include a state's duties and interests as a trustee of its natural resources.[21] Because a state is presumed to be representing the interests of all of its citizens, political subdivisions and private persons are not allowed to be plaintiffs in an equitable apportionment action.

None of this should be taken to mean that political subdivisions and private persons cannot be parties to an equitable apportionment action. They can be named as defendants or intervene as defendants but the simple fact is that no interventions have ever been allowed in an equitable apportionment suit, until now (with the exception of Indian tribes).[22]

The issue of when a non-state party may be joined or allowed to intervene is confused and controversial for several reasons. First, because equitable apportionment cases are considered to involve "unique interests" of sovereign states.[23] Second, because under the doctrine of *parens patriae* states are presumed to be representing—and binding—the interests of the state and all of its citizens, the Court has been reluctant to open the doors to additional parties. This is both for reasons of administrative convenience and out of deference to the quasi-sovereign status of the states. Clearly, the Court has refused their participation when it was based solely on their status as a "mere user" of water.[24] The general rule for intervention was set forth in the case of *New Jersey v. New York*[25] in which the Court found that intervention by non-state persons (whose state is already a party to the action) may be appropriate if that person can meet the burden of showing:

1) It has a compelling interest at stake in its own right;
2) That compelling interest is apart from the party's interest in the class with all other citizens and creatures of the state; and
3) That interest is not properly represented by the state.

In articulating these standards (and in denying intervention by the City of Philadelphia in the process), the Court made clear its reluctance to create the potential for intramural disputes between a state and certain of its citizens and political subdivisions. It also sought to avoid the inevitable flood of intervention requests if one non-state interest was admitted.

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[20] *See,* New Jersey v. New York, 345 U.S. 369 (1953) (*citing* Kentucky v. Indiana, 281 U.S. 163 (1930)).

[21] The nature and application of the doctrine is best described by Justice Holmes in Georgia v. Tennessee Copper Co., 206 U.S. 230, 237 (1907).

[22] See, Arizona v. California, 460 U.S. 605 (1983).

[23] "Unique interests" have been described by the Court as those that would be settled by treaty or force between sovereigns. Because states have yielded their treaty- and war-making sovereignty to the federal government, the states are accorded a degree of deference in pursing their interstate disputes in the realm that the Constitution as left to them, that rises above a mere question of local private rights. *See, e.g.,* Colorado v. New Mexico, 467 U.S. 310, 316 (1984), Kansas v. Colorado, 206 U.S. 46, 98 (1907), and Wyoming v. Colorado, 286 U.S. 494, 508-509 (1932).

[24] This standard for exclusion was made clear in the Court's refusal to allow Philadelphia to intervene in an apportionment case over the Delaware River to which the State of Pennsylvania was already an intervening party. *See,* New Jersey v. New York, 345 U.S. 369, 373 (1953).

[25] 345 U.S. 369 (1953).

Perhaps the most straight-forward situations in which non-state persons have been allowed to be parties are cases in which a political subdivision such as a city are joined as defendants to an action in such a way as to be subordinate to the state-defendant and where it is effectively the agent of the state in conducting the activity that gave rise to the complaint. The most notable example of this is the forced joinder of New York City in *New Jersey v. New York.*[26] In that case the proposed diversion that gave rise to New Jersey's objection was planned and would be executed by New York City. This "authorized agent of injury" doctrine does not trigger any Eleventh Amendment concerns and is so clearly defined that it would not seem to run afoul of any of the other reasons that weigh against allowing non-state persons to be parties. That fact that New York City was forcibly joined as a defendant distinguishes it from cases in which cities and other political subdivisions have sought to participate by intervention, but that does not necessarily mean that the outcome would be different. The question of whether an "authorized agent of injury" would be allowed to intervene as easily as being forced to join is apparently an open one, though the Special Master in the case is clearly of the mind that there is distinction between an "agent of injury" who is named or joined in an action and one who seeks to intervene.

In granting three interventions in the Catawba case, the Special Master has squarely raised the question of when intervention is permissible and what it takes to meet the *New Jersey v. New York* standard. Reduced to its essence, at stake is whether there is a stricter standard for non-state entities to be part of an equitable apportionment case than of other original jurisdiction cases and what the terms "compelling interest" and "not properly represented by the state" really mean in this context.

To the question of whether the standards for intervention in equitable apportionment cases are higher than in other original jurisdiction cases, the Special Master answers "no."[27] In the First Interim Report to the Court she notes, and discusses at some length, the Court's history of allowing non-state entities to intervene in other original jurisdiction matter (boundary disputes, interstate taxation cases). She also acknowledges that the Court has never permitted private persons or non-sovereign entities, including municipalities, to intervene in an equitable apportionment case, but concludes that does not matter and that if anything the Court's precedents establish that non-state entities may intervene in appropriate circumstances.[28]

In counter point, South Carolina and the United States contend that the intervention standards in equitable apportionment cases are indeed different because the nature of the disputes and the interests asserted are different when states are asserting the collective

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[26] *Id.*

[27] First Interim Report, *supra* note 6, at 24. Even if there are not different standards, the baseline rule as set forth by the Court is that ordinarily individuals have no right to intervene in original actions in the Supreme Court. *See*, U.S. v Nevada, 412 U.S. 534 (1973).

[28] First Interim Report, *supra* note 6, at 24. In reaching this conclusion the Special Master seems to answer a question that is not at issue. There is no debate that the Court has allowed non-state entities to intervene in original jurisdiction cases under appropriate circumstance. The real question is what are those appropriate circumstances and are there differences between different types of original jurisdiction questions.

interests of its citizens (and thus binding those citizens) than when they are asserting rights akin to private rights.[29]

As to the matter of what it takes to meet the *New Jersey v. New York* standards, the Special Master had to contend with the fact that there were no clear definitions of what a "direct stake" is, what constitutes a "compelling interest," or what constitutes inadequate representation of those interests by a state. Borrowing heavily from the body of all original jurisdiction cases, the Special Master confected four rules that she applied to rule on the intervention motions.[30] Under her four rules, intervention may be appropriate when:

1) The non-state entity is the instrumentality authorized to carry out the wrongful conduct or injury for which the complaining state seeks relief. (This is "agent of injury" standard articulated in *New Jersey v. New York*);
2) The non-state entity has an independent property that is directly implicated or is a substantial factor in the original dispute;
3) The non-state entity otherwise has a "direct stake" in the outcome of the action;[31] or
4) The presence of the non-state entity, together with one or more of the above circumstances, would advance the full exposition of the issues in the case.

Whether these rules are a fair interpretation of the *New Jersey v. New York* standards or a new test altogether is a matter open to debate and is being disputed by South Carolina. Regardless of the outcome of that dispute, the Special Master's analysis of the three interveners' interests is at least instructive as to what sort of stake a non-state entity will need to have if it is to have any chance of intervening.

In the cases of the City of Charlotte and Catawba River Supply Water Project, the Special Master found that as recipients of Catawba River water under the interbasin transfers complained of by South Carolina, they are in the same situation as New York City in *New Jersey v. New York*. In short, they are agents of injury and this gives them a compelling interest in the case.[32]

Duke Energy's situation is different. It is not transferring water out of the Catawba basin nor is it using transferred water. It does however effectively control the flow of the Catawba River through its reservoir system and the flow requirements contained in its federal license. Accordingly, the Special Master concluded that the outcome of the appropriation action would directly affect Duke Energy's management of the River's flows. That direct stake combined with a certain commonality of factors being considered in Duke's FERC relicensing process would, in the Master's view, foster a "full exposition of the issues" in the

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[29] *See, e.g.*, Brief for the United States as Amicus Curiae in Support of Plaintiff's Exceptions, *South* Carolina v. North Carolina, No. 138 Original, at 10 (Feb. 20, 2009) (*citing* Wyoming v. Colorado, 286 U.S. 494, 508-509 (1932).

[30] *See*, First Interim Report, *supra* note 6, at 20-21.

[31] The Special Master explains that the term "direct stake" should be construed in the context of the Court's original actions as she has discussed them in her Report. It is hard to see how this rule adds any helpful guidance since the Special Master herself acknowledged on page 19 of her Report that "there is little precedent for what type of "direct stake" will suffice.

[32] *Id.* at 26-27.

case.[33] Based on those factors, and the application of the third and forth rules articulated by the Special Master, Duke Energy was allowed to intervene.

The point of this discussion is not intended to be exhaustive nor conclusive. Indeed, given the pending nature of Catawba case, it cannot be. Rather, it should be taken as instructive as to the complex and compelling nature of the rights and interests of states and non-state actors where water is concerned. The conditions that drove the parties to litigate the apportionment of the Catawba are not unique to it. Increasing demand for fresh water, the need to manage and maintain instream flows, and the shifting role of water in energy, transportation, agricultural, and environmental policy clearly suggest that such disputes will become more common. The strains can already be seen on the Apalachicola, Tennessee, Missouri, and Mississippi Rivers where the balancing of equities and interests only become more challenging.

A. Injury/Benefit

Convincing the Court to accept an equitable apportionment case is one thing. Proving an injury or benefit sufficient to warrant apportionment is quite another. The history of apportionment cases clearly shows that the Court will take and rule on hard cases but it is also clear that the Court will not intervene to control the conduct of any state unless the harm to another state's rights/interests is serious and clearly established.[34] Proving an injury is easier said than done and the apportionment battlefield is littered with the dismissed complaints of states that could not meet the burden.

There is no formula for meeting the injury test. The nature of the injury can vary from case to case. Among those that have been alleged are injuries to property, navigation, water quality, and fisheries.[35] Irrespective of the nature of the alleged injury, no apportionment decree will be issued unless the petitioning State can show by clear and convincing evidence that the injury to it from not apportioning the water is clear and substantial.[36]

In cases in which apportionment is sought by a State proposing to divert water (as opposed to the more common Catawba-like situation in which a downstream state seeks apportionment to prevent or respond to an upstream state's water diversion) the nominal defendant state has the burden of showing that the diversion would cause substantial injury to it. If that burden is met, it becomes the petitioning state's burden to show that the diversion should nonetheless be allowed. According to the Court, this would require a showing by clear and convincing evidence that the benefits to the diverting state would substantially outweigh the harms to other state(s).[37]

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[33] *Id.* at 30.
[34] *See, e.g.,* Connecticut v. Massachusetts, 282 U.S. 660 (1931), Colorado v. New Mexico, 459 U.S. 176 (1982), Idaho v. Oregon, 462 U.S. 1017 (1983).
[35] *See, e.g.,* Connecticut v. Massachusetts, 282 U.S. 660 (1931).
[36] Idaho v. Oregon, 462 U.S. 1017 at 1027 (1983).
[37] *See,* Colorado v. New Mexico, 459 U.S. 176, 188 n 13 (1982) and Colorado v. New Mexico, 467 U.S. 310 (1984).

B. The Law of the Case

In deciding these cases, the Court is not bound by state laws. Rather, these cases are determined based on equitable principles and tenets of federal common law. It is clear from jurisprudence that while all affected states have equal rights before the Court it does not follow that they are entitled to an equal share of the river at stake.[38] This means the Court will balance the relative benefits, injuries, and interests of the states in reaching a decision.

While state law is not binding, it may play a role in shaping the Court's decision. In the Catawba case, the Special Master noted that the "Court has consistently held that state law, and water uses authorized by state law, are to be considered and weighed as the circumstances require."[39] This has been particularly true with regard to disputes between states that share a common approach to dealing with water. For example, in disputes between two states that follow the prior appropriation doctrine for defining and prioritizing water rights, the Court generally will work within that tradition and place a premium on protecting established uses.[40] This convention is both a natural rule of convenience and rooted in the doctrine of estoppel, thus guarding against states complaining against one another about that which they themselves allow under their laws.[41]

IV. Searching for Balance: Factors Influencing Apportionment

The purpose of equitable apportionment is not to rectify some past harm but to deal with present harm and prevent future injuries to the complaining state.[42] In deciding if and how to apportion a waterway, the Court considers any number of factors. History or priority of use has traditionally been one, but so are physical and climatic conditions, the rate and character of water use, return flows, the availability of storage water, the effects of wasteful use, and the respective benefits or harms of limiting flows or diversions.[43]

The selection and weighing of factors can vary from case to case and time to time. The importance of maintaining instream flows for navigation purposes has long been recognized. The value of maintaining flows to maintain or enhance ecosystems has not traditionally gotten much attention in these balancing tests,[44] but that could be very different today with the greater state and national emphasis on wetlands, fisheries, endangered species, and managing for sea level rise.

There are, however, two factors that deserve special mention because of the attention they have been given by the Court. The first is the impact on drinking water and domestic water supply. The second is the conservation of water.

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[38] *E.g.,* Connecticut v. Massachusetts, 282 U.S, 660 (1931).
[39] First Interim Report, *supra* note 6, at 37; *see also*, Tarlock, *supra* note 3, at § 10:15.
[40] Wyoming v. Colorado, 259 U.S. 419 (1922); *see also* Tarlock, *supra* note 3, at § 10:17.
[41] *Id.*
[42] Idaho v. Oregon, 462 U.S. 1017 (1983).
[43] *See, e.g.,* Nebraska v. Wyoming, 325 U.S 589 (which also makes clear these factors are illustrative and not exhaustive) and Idaho v. Wyoming, 462 U.S. 1017 (1983).
[44] The Court was unconvinced about the risk of material injury to fisheries and water quality, particularly in light of the competing benefits in *Connecticut v. Massachusetts*, 282 U.S. 660 (1931) and *Wisconsin v. Illinois*, 281 U.S. 179 (1930).

Previous Supreme Court decisions have held that drinking water and domestic water supply are the highest value uses of water.[45] Though that rule is not determinative of a given case (particularly in the face of more recent federal legislation granting special emphasis on protecting endangered species and ecosystems), it is clearly a weighty and compelling factor.

Likewise the importance of conserving and augmenting water supplies has been stressed with increasing frequency by the Court in its apportionment decisions. Central to the Court's approach to equitably apportioning water is the tenet that water should not be wasted and that it will only protect rights to water that are reasonably required and applied.[46] Indeed, the Court has gone beyond using this as factor in balancing equities to imposing an affirmative duty on states to conserve and augment the flows of interstate streams.[47]

This really should not be terribly surprising. It is fundamentally an application of the equitable maxim that to get equity one must do equity. Nonetheless the number of states that have lost before the Court at least in part because of this lack of conservation should be taken to heart as a cautionary note, particularly in the eastern states less steeped in tradition of viewing water as scarce and rivers as a treasure.[48]

V. Relevance to Riparian States

The days of easy water in America are over. We are in a new era in which water scarcity is not a regional or occasional problem but a fundamental reality. It is an era in which in the conservation and allocation of water will touch every community and shape the development of communities and economies. It is an era long predicted but not long planned for. And it is an era that our present legal regimes and public policies are poorly suited to deal with. This is particularly true for those states with the riparian law traditions, especially those states in the Mississippi River valley which are both dealing with the challenges of meeting their own water needs and contending with the growing pressure to move water from to their watershed to other less water rich areas. For those states, the Catawba is a dress rehearsal for a show that will soon take to the road.

The case demonstrates both the increasing value placed on water and its increasing scarcity. It also offers a reminder of the complexity of the issues at stake and elements and burdens of proof that will shape the winners and losers in these emerging water wars.

In the near future these states should anticipate contending with one or more efforts to divert or allocate interstate rivers. Indeed, it is increasingly likely that these disputes will expand from competitions over interstate streams to interstate aquifers. The outcome of those cases (and the well-being of the respective states) will turn on how well those states are able to articulate and defend their rights and interests and, when necessary, prove how their interests would be imminently harmed or benefited by a diversion or allocation of

[45] *See, e.g.,* Connecticut v. Massachusetts, 282 U.S. 660 (1931).
[46] Colorado v. New Mexico, 459 U.S. 176 (1982).
[47] *Id.*
[48] *See,* Colorado v. Kansas, 320 U.S. 383, 394 (1943)

waters. And let's not forget the Court's emphasis on encouraging water conservation as a factor in its equitable appropriation decisions.

These are not conjectural problems. Plans for tapping and diverting the Missouri, Mississippi, and Tennessee Rivers already exist at some level.[49] The development of energy and transportation policies that are more in synch with lower greenhouse gas emissions and national energy independence will have (and in fact already are having) a significant impact on water usage. And the growing importance of conserving and restoring aquatic habitats as a national priority is already forcing the development of water budgets for the same interstate rivers that are being looked to sources of divertable water.

The plain lesson of the Catawba and the history of equitable apportionment is that unless states and other interested entities make clear their need for robust riverine (and in all likelihood, groundwater resources) someone else will. It is also clear from the record of equitable apportionment cases that it is not enough to claim those resources are important, states must act affirmatively like they are.

One might well infer that the Court was doing more than just agreeing to consider the complaints of South Carolina when it accepted the Catawba case. The Court seems also to be preparing itself for a new generation of apportionment cases and sending the message to other states to pay attention and begin preparing for the new water reality that even "water rich" states now face. With so much at stake, it would be a good lesson to learn.

[49] For example, the Texas Water Plan of 1968 called for the diversion of up to 15 million acre feet of water per year from the Mississippi River via two vaguely described conveyances across Louisiana. As recently as 2006 there have been discussions in some circles about resuscitating the Mississippi River diversion aspects of the Texas Plan. The State of Georgia is seeking to redraw its boundary with Tennessee so as to become riparian to the Tennessee River in connection with Georgia's efforts to secure a more dependable water supply for Atlanta. *See also*, Shaila Dewan, *Georgia Claims a Sliver of the Tennessee River*, NY TIMES, Feb. 22, 2008; Eryn Gable, *Could Midwestern Supplies be Answer to Las Vegas's Woes*, LAND LETTER (E&E Publishing), Apr. 9, 2009.

Managing Water Resources for Sustainability on Vashon-Maury Island, King County, Washington

Laurence Stockton, Eric Ferguson[1]

"Whiskey is for drinking; water is for fighting over."
Mark Twain

"When the well is dry, we know the worth of water."
Benjamin Franklin

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I. Introduction

The Vashon-Maury Island (VMI or Island) watershed is an EPA-designated sole source island aquifer located in the Puget Sound. All drinking water sources on the island (springs, surface water, and groundwater) are supplied by precipitation. Understanding the water budget for VMI, and changes that are occurring in response to human activities and climate, is critical to determining the amount of water that can be consumed on a sustained basis. On VMI, there is broad local recognition of the shared responsibility for water resources and recognition that each water user can affect the quantity and quality of the water supply of others.

Vashon-Maury Island is located in the Puget Lowland within the boundaries of King County, Washington situated southwest of Seattle and north of Tacoma.[2] The Island encompasses approximately 37 square miles of which 29.7 square miles are on Vashon Island and 7.0 square miles on are Maury Island (see Figure 1). The topography of the Island varies from sea level to elevations in excess of 460 feet based on U.S. Geological Survey topographic maps. The shoreline extent of Vashon-Maury Island is just over 58 miles, most of which lies beneath steep, slide-prone slopes. The Island has more than 70 stream basins.[3] Two of these, Judd Creek (3,149 acres) and Shinglemill Creek (1,996 acres), are large with separate sub-basins. All of the stream basins drain into Puget Sound.

A. Geology

A recently updated geologic map of VMI provides a comprehensive description of its geology. In 2004, GeoMap NW completed a detailed analysis of field data and data compiled from well logs for King County as part of the Water Resources Evaluation (WRE) Project (discussed in detail below). The analysis concluded that the Island is composed of glacial derived sediments deposited during several glacial episodes. The predominant geology on Vashon-Maury Island is glacial till. This unit (as well as other till-like units) covers

[2] The two islands are linked by a narrow isthmus and are not, therefore, truly independent islands. Vashon-Maury Island is bordered on the west by Colvos Passage from the Kitsap Peninsula, on the south by Dalco Passage from Tacoma, on the east by Puget Sound and King County, and on the north by Puget Sound. Vashon Island is about 13 miles long (north to south) and 4 miles across (east to west) in the widest areas. Maury Island is about 5 miles long (northeast to southwest) and about 1 mile across (northwest to southeast).

[3] KING COUNTY, DEPARTMENT OF NATURAL RESOURCES AND PARKS, VASHON-MAURY ISLAND RAPID RURAL RECONNAISSANCE REPORT S-2 (2004) *available at* http://www.kingcounty.gov/environment/watersheds/central-puget-sound/vashon-maury-island/recon-report.aspx (last visited June 15, 2009).

approximately 68% of the Island and helps define the topography. The remaining 32% of the Island is composed of glacial outwash and alluvial deposits generally occurring on stream corridors and shoreline areas where erosion has removed the till overburden.

In addition, GeoMap NW updated the aquifer contamination susceptibility mapping on Vashon-Maury Island by compiling a new geologic map and newly gathered depth to water information. The updated aquifer contamination susceptibility mapping is the foundation for the Critical Aquifer Recharge Area (CARA) map showing critical water supply aquifer recharge sites on Vashon-Maury Island.

B. Precipitation and Climate Change

Precipitation is the main source of recharge and can vary greatly across Vashon-Maury Island. According to the National Oceanic and Atmospheric Administration's average precipitation zone maps for the Puget Sound area, Vashon-Maury Island has three zones (at 5-inch intervals) across the Island, with rainfall ranging from 45 inches to 35 inches per year. The measured variation was 18 inches from the east to west side of the Island.[4] In 2004, additional precipitation gauges were installed as part of the WRE Project to help determine the variation in precipitation across the Island.[5] New rainfall contours (zones) were generated from this new data showing a variation of about 13 inches (48 to 35 inches/year) across the island. The new precipitation data is being used to model a more representative distribution of recharge for the Island.

Recently, the University of Washington Climate Impacts Group predicted a warming trend in temperature for this region.[6] The Group predicts that by 2075 the average temperature will increase by 4 to 9 °F in the summer and by 2 to 8 °F in the winter. The predictions for the total amount of precipitation are variable depending on the model, but there is agreement that precipitation is likely to fall with higher intensity over shorter time periods. Despite unknown changes in the amount of precipitation, changes in recharge will occur on VMI due to elevated temperatures resulting in more evapotranspiration and less groundwater inflow.

C. Population and Land Use/Cover

The population of Vashon-Maury Island is growing. The Island population has grown steadily from 6,516 in 1970, to 7,377 in 1980, to 9,309 in 1990, to 10,100 in 2000.[7] The fastest growth since 1970 occurred between 1980 and 1990 when the population increased

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[4] J.R. CARR, CARR & ASSOCIATES, VASHON-MAURY ISLAND WATER RESOURCES STUDY (1983).
[5] ERIC FERGUSON, KING COUNTY DEPARTMENT OF NATURAL RESOURCES AND PARKS, VASHON-MAURY ISLAND 2005 DATA REPORT (2006), *available at* http://your.kingcounty.gov/dnrp/library/2006/kcr1941.pdf (last visited June 15, 2009).
[6] King County, Climate Change Technical Subcommittee Regional Water Supply Planning Process, Climate Change Building Blocks (2006).
[7] U.S. CENSUS BUREAU, WASHINGTON: 2000 SUMMARY POPULATION AND HOUSING CHARACTERISTICS, PHC-1-49 (2002) *available at* http://www.census.gov/prod/cen2000/phc-1-49.pdf (last visited June 15, 2009).

26%. Between 1990 and 2000 the rate of growth had slowed to 9%. According to the Puget Sound Regional Council (PSRC), the population of VMI will continue to grow.[8]

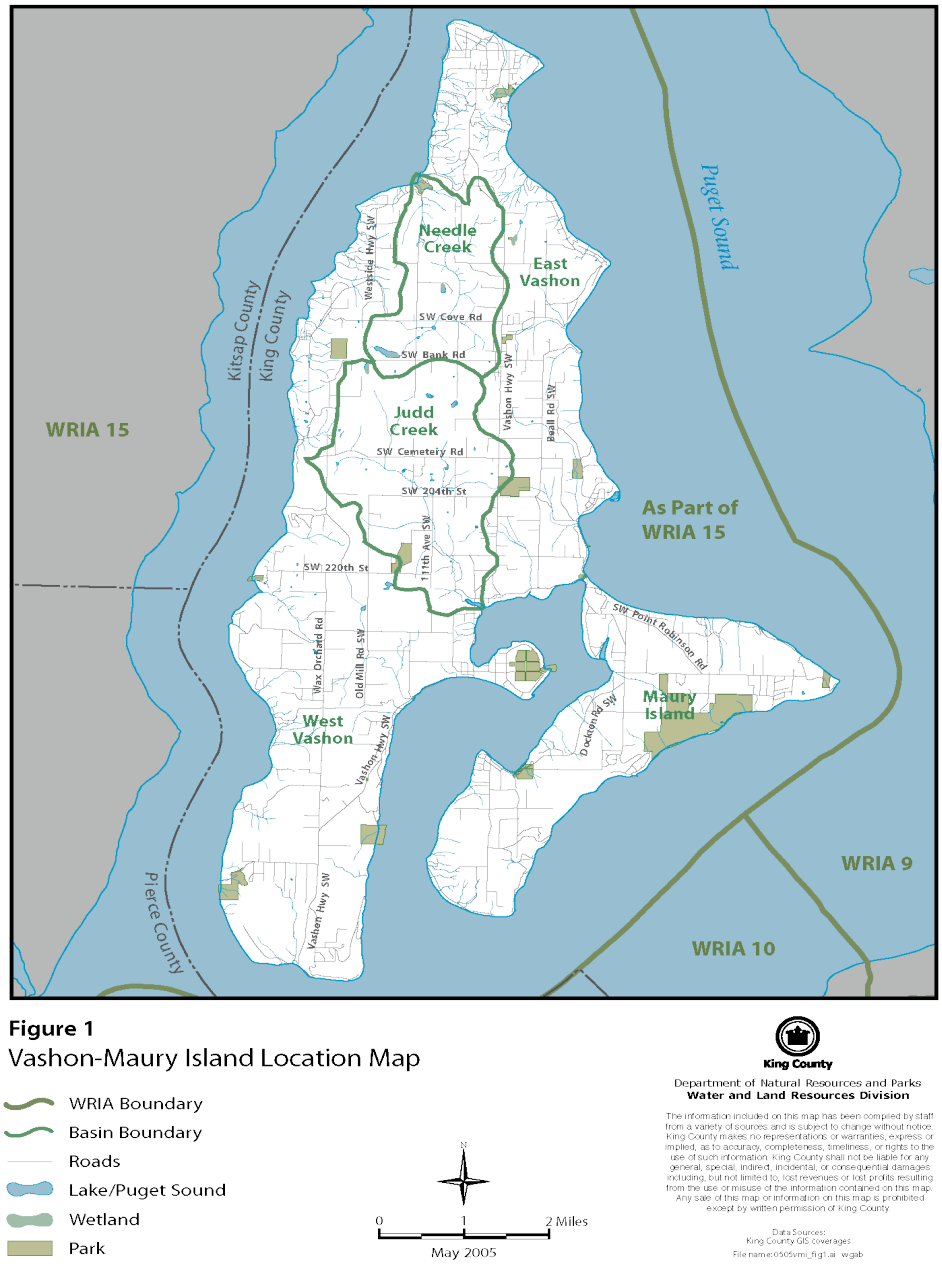

Figure 1
Vashon-Maury Island Location Map

Fig. 1. Map of Vashon-Maury Island, courtesy of King County.

[8] The PSRC estimates that the population of the Island will increase by 1,000 people by 2040, or 10% per decade. PUGET SOUND REGIONAL COUNCIL, VISION 2040: THE GROWTH MANAGEMENT, ENVIRONMENTAL, ECONOMIC, AND TRANSPORTATION STRATEGY FOR THE CENTRAL PUGET SOUND REGION (2008), *available at* http://psrc.org/projects/vision/index.htm (last visited June 15, 2009).

The number of occupied households on Vashon-Maury Island increased by 13% (3,703 to 4,193) between 1990 and 2000. The difference between the population increase and the number of households is based on the decreasing size of the average household. In 2000, this value was estimated to be 2.4 people per household, down from 2.5 in 1990. Under Washington's Growth Management Act (GMA), most local governments are required to develop comprehensive plans for growth at different densities in three categories of land: urban, rural, and resource. Vashon-Maury Island is designated as rural and is located outside the urban growth area boundary designated by King County in its 2008 Comprehensive Plan, developed pursuant to the Washington State Growth Management Act, discussed in more detail in Section III.G. Low-density residential development covers much of the Island, with zoning of one home per five or ten acres. Higher density residential areas are concentrated in the Vashon Town Center and along parts of the shoreline including Vashon Heights, Burton, and Dockton. Multifamily, commercial, and industrial uses are presently concentrated in the unincorporated town of Vashon and adjacent areas where sewer and other urban services are available. The land cover for Vashon-Maury Island is 73% forest, 16% non-forest, and 11% developed lands.[9]

There are concentrations of impervious surface in the areas of Vashon, Burton, and Dockton. There are also isolated concentrations of impervious surface elsewhere on the Island, including the Vashon School District properties, the park and ride lots, and the airport. Impervious surface is most concentrated in the town of Vashon, where runoff enters pipes that discharge into roadside ditches. Runoff from the town of Vashon discharges to the Gorsuch, Judd, and Shinglemill Creek drainage basins. Projected development in the town of Vashon is expected to increase the concentration of impervious surface. The E. Fork Judd Creek drainage basin is projected, at build-out, to be a large effective impervious area (EIA). EIA in the E. Fork Judd Creek area is projected to increase almost fourfold over the current level to 13.8%. In the sub-basin of the Shinglemill watershed, which includes a portion of Vashon Town Center, the Rapid Rural Reconnaissance projects a tripling of impervious surface to 9.9% at build-out, Overall EIA is projected to increase from 2.2% to 7.5% in the Judd Creek Drainage Basin and from 2.0% to 6.9% in Shinglemill Creek Drainage Basin.[10]

II. Vashon-Maury Island Water Resources

The majority of the residents of Vashon-Maury Island get their drinking water from public water systems. Figure 2 shows the locations of public water systems on VMI and their service areas. The additional service area shown in Figure 2 represents the only designated wastewater collection and treatment (sewered) area on the Island within the Vashon Town Center. All drinking water sources on the Island (springs, surface water, and groundwater) are supplied by local precipitation. No pipelines or aqueducts import water onto the island. The drinking water quality on the island is generally good with some exceptions in locations where nitrate levels are elevated or saltwater has intruded into the aquifer.

[9] KING COUNTY DEPARTMENT OF NATURAL RESOURCES AND PARKS, VASHON-MAURY ISLAND WATERSHED PLAN 4-5 (2005), *available at* http://www.kingcounty.gov/environment/watersheds/central-puget-sound/vashon-maury-island/watershed-plan.aspx (last visited June 15, 2009).

[10] VMI Rapid Rural Reconnaissance Report, *supra* note 3, at 2-10–2-11.

Vashon-Maury Island was designated a sole source aquifer by the U.S. Environmental Protection Agency (EPA) in June 1994. To be so designated, an aquifer must supply at least 50% of the drinking water consumed in the area overlying the aquifer and the population can have no alternative drinking water source that could physically, legally, and economically replace the supply provided by the aquifer.[11]

Large public water systems are classified by Washington State Department of Health (DOH) as Group A systems if they serve 15 or more connections. The other (smaller) public system classification in the state is called Group B; this class serves 2-14 connections. The seven largest Group A water systems serve more than 50% of the Island population (see Figure 2). The seven Group A systems on the Island with water services designated in the 1990 Vashon Critical Water Supply Plan occur in Burton, Dockton, Gold Beach, Heights, Maury Mutual, Water District 19, and Westside. Residents who are not connected to public water systems obtain their water from an estimated 800 "exempt" wells.[12] These are generally wells with small withdrawals that are "exempt" from the state's water right permitting requirements.

A. Vashon-Maury Island Water Resources Report

The first major report on Vashon-Maury Island water resources was completed in 1983 and is commonly referred to as the "Carr Report."[13] The Carr Report was prepared twenty-five years ago to answer four questions:

1. What are the characteristics of the water supply? (Where does the supply originate? Where is it located? And what is its quality?)
2. How much water is available for human use?
3. What constraints does the water resource place on population density and land use?
4. What needs to be done to protect and enhance the water resource for future generations?

The Carr Report concluded that precipitation is the only source of recharge to the Island aquifers. This finding was significant at the time, as many people then believed the Island's water supply came from distant sources such as the Olympic or Cascade Mountains.

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[11] US Environmental Protection Agency, Region 10, *Questions and Answers about Sole Source Aquifers, What Criteria have to be Met for Designation?*, http://yosemite.epa.gov/r10/water.nsf/2fb9887c3bbafaaf88256b5800609bf0/9fe289eed8753b2e882564de0056ecd2!OpenDocument .

[12] KING COUNTY DEPARTMENT OF NATURAL RESOURCES AND PARKS, VASHON-MAURY ISLAND PHASE I GROUNDWATER MODEL REPORT (2005), *available at* http://your.kingcounty.gov/dnrp/library/2005/kcr1895.pdf (last visited June 29, 2009).

[13] VMI Water Resources Study, *supra* note 4.

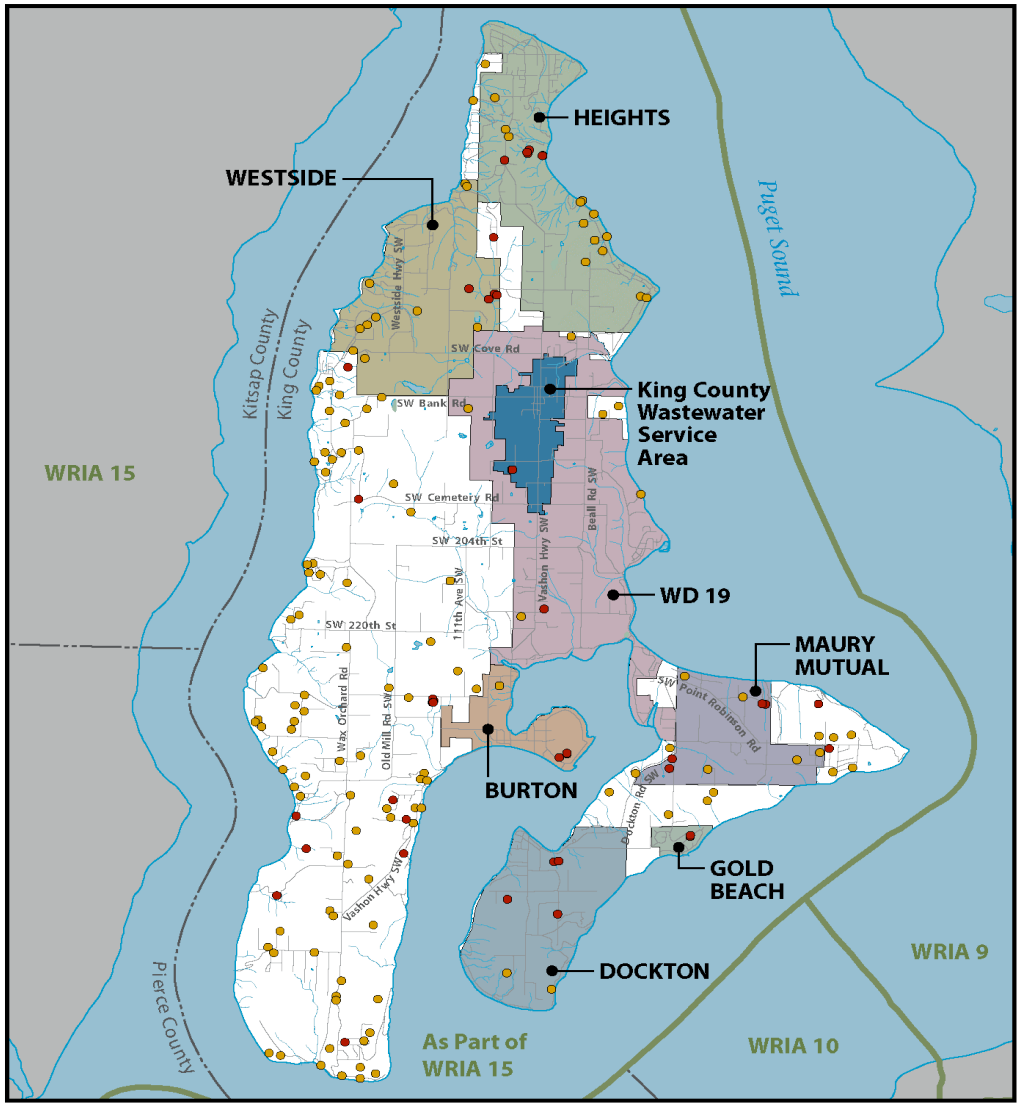

Figure 2
Public Water Systems of Vashon-Maury Island

Fig. 2. Public Water Systems (PWS) on Vashon-Maury Island, courtesy of King County. The sources for all Group A and Group B public systems are shown. The majority of the population of VMI receives their water from PWS. The seven largest Group A PWS are shown with their service areas. The King County wastewater service area is the only major part of the island that has designated wastewater collection and treatment.

The Carr Report documented that the Island's water supply is obtained primarily from wells and springs. By studying well logs compiled when the wells were drilled the Carr Report determined that approximately 95% of the wells get their water from a "principle aquifer." The principle aquifer is composed of fine to medium glacial outwash sand that yields moderate amounts of water and is generally located above sea level. A deep aquifer lies below the principle aquifer at depths of 100 – 300 feet below sea level. The deep aquifer is separated from the principle aquifer by a clay aquitard layer that limits aquifer recharge. Few wells are drilled into the deep aquifer which was estimated to be capable of yielding larger quantities of water, but its recharge capacity was determined to be more limited due to the aquitard layer.

The Carr Report developed a water budget for the Island based on measured precipitation, temperatures, and stream flows. The study found the Island receives an average of 40 inches of precipitation (primarily rain) annually. Half of the total annual precipitation received (20 inches) was calculated to be lost to direct evaporation or transpiration by plants (evapotranspiration). Another 15 inches of the total annual precipitation was calculated to be lost via direct run-off to streams. Only 4 inches of total annual precipitation was estimated to infiltrate and recharge the principle aquifer at a rate of approximately 6,000 gallons per minute. Just 1 inch was estimated to infiltrate through the clay aquitard layer to recharge the deep aquifer at a rate of approximately 2,000 gallons per minute.

The Carr Report tested groundwater quality and found it was generally good. However local areas of water quality concern were found. Some wells tested had elevated nitrate levels thought to be from septic tank effluent and animal waste. Other wells tested had elevated chloride levels indicating salt water intrusion.

Based on the estimated aquifer recharge and calculated water producing (productive) capacity of the principle aquifer that supplies 95% of the groundwater on the Island, the Carr Report calculated the Island could support a total population of 13,000 people. However, based on the potential water contamination impact from septic tank effluent described as the "groundwater renovation capacity," the study recommended that the total population on the Island should be limited to 11,000 people.

The Carr Report concluded that the Island's water supply is limited and vulnerable to contamination. The study provided a series of long-term recommendations to manage the Island's water supply including;

1) Create or designate a specific agency with responsibility for managing the islands water resources;
2) Initiate an fourteen-point water resource monitoring and investigation program;
3) Integrate the Carr Report findings into the land use plan and produce a comprehensive water management plan; and
4) Implement the water management plan as soon as possible.

For the more near-term, the Carr Report recommended implementation of a series of conservative interim measures to protect the groundwater supply while the long term recommendations were being implemented including:

1) Limit the Island's total population to a maximum of 11,000 people;
2) Adopt zoning limiting density to protect the aquifer recharge potential of the land (high = 1 unit per 10 acres, medium or low = 1 unit per 5 acres without sewer);
3) For areas where higher density is already allowed, enact building moratoria to reduce or stabilize groundwater degradation by septic systems;
4) Revise subdivision and building codes to maintain and enhance recharge capability and water quality;
5) Preserve high recharge areas as parks or open space and protect sensitive landslide areas;
6) Provide sewer collection, treatment and disposal off-island for all high population density areas (limited by the Growth Management Act to the Vashon Town Center or locations declared a to be a risk to public health);
7) Improve the sewage treatment plant (located in the Vashon Town Center) to exclude infiltration of stormwater and shallow groundwater;
8) Monitor the existing solid waste disposal landfill and develop a long term plan to dispose of solid waste off-island; and
9) Implement a program of public education to promote conservation and protection of the water resource.

B. Groundwater Management Plan

The Washington Legislature enacted the groundwater management area provisions in 1985 with amendments in 1988.[14] Subsequently, the Washington Department of Ecology (Ecology) promulgated rules for the designation of groundwater management areas, and set forth a process for the development of groundwater management programs.[15] Groundwater management plans are developed to protect groundwater quality, assure groundwater quantity, and provide efficient management of water resources for future needs while recognizing existing water rights. The intent of the plan is to forge a partnership between a diversity of local, state, tribal, and federal interests to cooperatively protect the state's groundwater resources.

King County delineated five Groundwater Management Areas (GWMAs) in accordance with the state law and regulations: East King County, Issaquah Creek Valley, Redmond-Bear Creek Valley, South King County, and Vashon-Maury Island. Once established by the County, each GWMA formed a committee of stakeholders and created a groundwater management plan.

The Groundwater Management Plan for Vashon-Maury Island was completed in 1998.[16] The VMI Groundwater Management Plan built upon the Carr Study and incorporated many new management strategies to protect the Island's groundwater quantity and quality. Some of the key findings and differences from the Carr Report are describe below.

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[14] *See* WASH. REV. CODE § 90.44.400.
[15] *See* WASH. ADMIN. CODE Ch. 173-100.
[16] KING COUNTY DEPARTMENT OF NATURAL RESOURCES AND PARKS, VASHON-MAURY ISLAND GROUNDWATER MANAGEMENT PLAN (1998). The VMI Groundwater Management Plan was accepted by King County in 1998 and subsequently certified by the Washington Department of Ecology.

While preparing the plan, the Water and Land Resources Division of King County Department of Natural Resources and Parks collected additional measurements of precipitation, temperature, and stream flows to develop a refined water budget for the Island. The new water budget concluded there was approximately 21,000 gallons per minute of water available to recharge the aquifers. This estimate was significantly (2.6 times) higher than the Carr Report which only estimated a total recharge of approximately 8,000 gallons per minute (6,000 principal and 2,000 deep). The water budget incorporated into the VMI Groundwater Management Plan suggests the Island can support a significantly higher total population. Unlike the Carr Report, however, the Plan made no estimate of the actual population the Island could support.

King County also re-evaluated the well logs and refined the aquifer characterization and concluded there were four discrete aquifers on the Island. Like the Carr Report, the VMI Groundwater Management Plan found most of VMI's wells withdraw from the shallower aquifers; as the deep aquifer is 400 hundred feet deep or more and often below sea level. The Plan found that the shallow aquifer wells are most vulnerable to contamination and wells in shoreline areas are vulnerable to saltwater intrusion if over-pumped.

The authors of the VMI Groundwater Management Plan reached a number of important conclusions to guide management of the Island groundwater resources. First, the quantity and quality of groundwater is tied to the quantity and quality of surface water. Second, adequate protection of groundwater requires protecting surface water. Third, enforcement of existing laws is essential to protect water quality and water protection polices in the land use plan must be fully implemented to protect Island water resources.

Land use activities affect both recharge and demand for water. Island residents have invested in drilling wells and obtain water supplies at substantial cost, and it is unacceptable to allow the population to increase to the point where current residents could lose their existing water supplies due to contamination or overuse. As part of the 1990 Vashon Community Land Use Plan (based on Carr Report), the groundwater supply was estimated as capable of supporting a population of around 11,000 people. Local zoning ordinances, however, could allow approximately 20,000 residents. The increased estimate of groundwater availability in the GWMP plan is constrained by the need to maintain stream flows, water tables and prevent saltwater intrusion.

There are statewide groundwater management goals to protect groundwater quantity and quality. Accordingly, the VMI Groundwater Management Plan calls for managing quantity to optimize current and long-term benefits for present and future residents through a combination of conservation, infiltrating stormwater, public education, long-term data collection and monitoring, and implementing land use control measures. The Plan calls for protection of water quality through management of hazardous materials, sewage treatment, underground storage tanks, landfills, pesticides, and sand and gravel mining.

The Plan identified a series of priority groundwater management issues to be addressed including:

1) Establish the groundwater management area as an aquifer protection area;

2) Establish a data collection and management program for quality and quantity;
3) Define action levels for indicator chemicals or contaminates;
4) Establish a response mechanism for monitoring results that reach action levels;
5) Provide public education to ensure stewardship of the resource; and,
6) Implement land use measures to prevent contamination.

C. Water Resources Evaluation

In 2001, King County Department of Natural Resources and Parks began a groundwater monitoring program to assess the current status of the groundwater quantity and quality on the Island. Ambient monitoring had not been done on the Island since the data collection for the VMI Groundwater Management Plan was completed in 1992. King County remains one of the few places in Washington State with a groundwater monitoring program. The long-term monitoring on VMI allows King County to assess the Island's water quality trends in comparison to the data collected as part of the VMI Groundwater Management Plan (1989-1992) and the Carr Study (1981-1983).

The Water Resources Evaluation (WRE) project was launched in 2004 to monitor all water resources on the Island (precipitation, surface water, and ground water). The effort to establish an accurate water balance for the Island is a priority for the Groundwater Protection Committee (GWPC). King County is assessing water availability by developing a water budget-based model at the request of the GWPC. The project is scheduled to be completed in 2010. The WRE includes two modeling efforts utilizing the new monitoring information along with all the other necessary data to better assess the Island's overall water balance. The WRE water balance is being prepared to resolve the differing estimates of groundwater availability calculated from the water budgets prepared in the 1983 Carr Report and the VMI Groundwater Management Plan. To calculate aquifer recharge, the WRE water balance formula is precipitation minus evapotranspiration and stormwater runoff. Aquifer discharge is estimated by calculating spring flow, stream baseflow, and well pumpage with the remaining flow discharging to Puget Sound.

In the first phase of modeling, WRE staff created an island-wide (steady-state) groundwater flow model to better assess the available water resources. This model used new data gathered by the WRE in addition to the data collected by earlier studies. The effort highlighted the fact that ground and surface water quantity data was not readily available or well monitored on the Island. The Phase I modeling effort produced a new estimated aquifer recharge (16,455 gallons per minute (gpm)) that was between the two previous study results (see Table 1). Much of the usage data for the smaller (Group B) public water systems and the domestic wells was estimated based on regional usage patterns.[17]

Currently, the County is conducting Phase II modeling. Phase II models will better incorporate unsaturated/saturated conditions using dynamic evapotranspiration, plus surface and groundwater interactions. Phase II modeling will also allow assessment of the effects of projected climate changes and population growth. Modeling the impact of these

[17] ECONOMIC AND ENGINEERING SERVICES, INC., CONSOLIDATED REPORT ON WATER SUPPLY IN KING COUNTY, PREPARED FOR SEATTLE PUBIC UTILITIES (2002).

projected changes will help the GWPC better assess long-term sustainability of water quantity resources on the Island.

The WRE modeling has added importance because Ecology is not granting new surface water or groundwater withdrawal rights on many parts of the island. The closure is due to Ecology's determination that the island ground water is in hydraulic continuity with major stream basins previously closed to further appropriation of surface water.

Table 1. Water Balance from Vashon-Maury Island water resource studies.[18]

	Modflow	Mike-She	Carr	VMI GW Plan
Precipitation (gpm)	49,584	52,046	48,851	56,500
Evapotranspiration	43%	41%	50%	40%
Runoff	24%	22%	37%	23%
Recharge (gpm)	16,455	19,369	6,107	20,960
Outflows				
Puget Sound	80%	37%	20%	38%
Streams	12%	53%	80%	62%

The closures are contributing to limitations on development in the areas of the Vashon Town Center zoned high-density and served by Water District 19 and inside three other designated Group A water utility service areas (see Figure 2). However, development continues to occur within closed basins utlizing exempt wells permitted predominately for domestic usage.

III. Legal framework for Management of Water on Vashon-Maury Island

The legal framework for management of the water resources for Vashon-Maury Island is established by Washington State.[19] This section provides an overview of the chronological development of the laws that establish the legal basis for existing water rights on the Island. The timeline is important to understand why new water rights are not being granted on the Island today and why new growth is continuing to occur with water provided by permit exempt wells, without benefit of water rights. This section also explains the range of resource management tools that exist today and identifies areas where new law needs to be created to protect the Island's groundwater.

The chronology of the water resources legal framework suggests a trend towards increasing regulation that parallels the growth in the state's population, demand for water, and knowledge of water resources and effective management tools. Initially, the appropriation of water resources was addressed through common law doctrines. Specific codes for surface water and groundwater soon emerged. Subsequent laws created water management tools ranging from well construction permits to elaborate water resource planning and management requirements.

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[18] Adapted from VMI Phase I Groundwater Model Report, *supra* note 12, Table 4-2.

[19] *See* WASHINGTON STATE DEPARTMENT OF ECOLOGY, WATER LAW: A PRIMER, Pub. No. WR-98-152 (2006), *available at* http://www.ecy.wa.gov/pubs/98152.pdf (last visited June 29, 2009).

Early settlers on the Island could secure a water right under two common law doctrines: the "appropriative doctrine" (post notice at point of diversion and if not protested put the water to use) or the "riparian doctrine" (just use the water adjacent to your property). In times when there was not enough water for all, the system for water right priority, or the sequence in which water rights were entitled to be used, was established through "appropriative use" and "first in time was first in right" under western water law.[20]

A. Water Code of 1917

In 1917, Washington adopted a uniform water code to govern surface water appropriation. The Surface Water Code (1) declared that all unclaimed water belongs to the public; (2) established the appropriation doctrine as the exclusive way to create a water right; (3) created a centralized water right administration agency within the state, with authority to issue permits, set a timeframe to put the water to beneficial use, and authorize water use through a certificate that established a priority date and described the quantity, place of use, and purpose of use; and (4) established an adjudication system.[21] In addition, the Surface Water Code required that new water rights meet four criteria before a right would be granted: (1) beneficial use (not wasteful); (2) water availability; (3) no impairment to existing water rights; and (4) no detriment to the public interest.[22]

B. Groundwater Code of 1945

In 1945, Washington adopted a uniform code governing groundwater appropriation that essentially extended the surface water code to groundwater.[23] Before 1945, the "reasonable use" doctrine allowed a user unlimited access to groundwater as long as the use was "reasonable," i.e. not wasteful. Whether there was an impact to any other water right, or whether the use was earlier in time was not relevant. The Groundwater Code replaced this reasonable use doctrine with a permit system, with features and attributes similar to those for surface water permits.

The Groundwater Code exempts four types of groundwater uses from the water right permitting requirements:

- Watering livestock (no gpd limit or acre restriction);[24]
- Watering a non-commercial lawn or garden one-half acre in size or less (no gpd limit);
- Water for single or group domestic uses (limited to 5,000 gpd);[25] and

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[20] *Id.* at 2.
[21] *Id.* at 3.
[22] *Id.* at 4.
[23] *See* WASH. REV. CODE Ch. 90.44.
[24] Op. Wash. Att'y Gen. 2005 NO. 17, 2005 WL 3142148 (2005).
[25] Washington Department of Ecology v. Campbell & Gwinn, LLC, 43 P.3d 4 (Wash. 2002). *Campbell & Gwinn* raised the question of how the groundwater exemption applies to a residential subdivision, in this case twenty lots. The Washington Supreme Court ruled that if you wish to develop land and supply the development with domestic water from several wells, and each well will pump less than 5,000 gpd but all the wells together will pump more than 5,000 gpd, the project is considered a single withdrawal of groundwater and is not exempt from permitting requirements.

- Water for industrial purposes, including irrigation (limited to 5,000 gpd but no acre limit).

New development using permit-exempt wells based on the above categories has become a major trend on Vashon-Maury Island and other areas of Washington State as water rights have become increasingly difficult to obtain. The Washington State Attorney General, however, issued an opinion in 1997 that clarified that even though exempt wells do not need to secure water right permits, they are still subject to other water laws.[26] This means, essentially, that exempt wells may not be used in a manner that impairs other water rights.

C. Water Rights Claims Act of 1967

In 1967, the Legislature passed the Water Right Claims Act authorizing the state to accept and register water right claims and requiring the state to record the amount and location of pre-code water rights and exempt groundwater uses.[27] Previously, both the surface and groundwater codes had allowed water users to file "claims" for water appropriated and put to beneficial use prior to the effective date of the respective codes. The initial claim periods, however, have been reopened on multiple occasions by action of both the legislature and courts to fully recognize preexisting water uses. These claims are the single largest category of potential water rights in the state, and their validity will not be known until a formal court proceeding, referred to as an adjudication, is completed for all water rights in any given basin or sub-basin.

D. Water Well Construction Act of 1971

The Water Well Construction Act of 1971 regulates water well drilling to protect public health and safety.[28] The water wells are installed for a variety of uses, including potable, nonpotable, monitoring, and other uses. Property owners or their agents (which could include well drillers) must notify the state 72 hours before starting to drill or construct a well. A driller must submit a water well report to Ecology following construction of a well. Under the Act, Ecology may limit or prohibit well drilling in areas requiring intensive control of groundwater withdrawals.

E. Water Resources Act of 1971

Under the Water Resources Act of 1971 (WRA), Ecology is authorized to "establish minimum water flows or levels for streams, lakes, or other public waters for the purposes of protecting fish, game, birds, or other wildlife resources, or recreational or aesthetical values of said public waters."[29] Such "instream flows" are water rights and have as their priority date the date of rule adoption.[30]

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[26] Op. Wash. Att'y Gen. 1997 No. 6 (1997).
[27] *See* WASH. REV. CODE Ch. 90.14.
[28] *See id.* Ch. 18.104.
[29] *Id.* § 90.22.010.
[30] *Id.* § 90.03.345.

Through administrative rulemaking, Ecology has closed Judd Creek, Fisher Creek, and Shinglemill Creek on Vashon Island to new surface water appropriation.[31] (see Figure 3). The groundwater in these basins has been determined to be in "hydraulic continuity" with the surface water and no new water rights have been issued within the basins since 1990. The combined area of the three drainage basins covers more than 50% of Vashon Island. Judd Creek was closed in 1951 on the basis that there were no waters available for further appropriation for consumptive use. Fisher Creek and Shinglemill Creek were closed in 1981 on the basis of the need for high instream flow for anadromous fish.

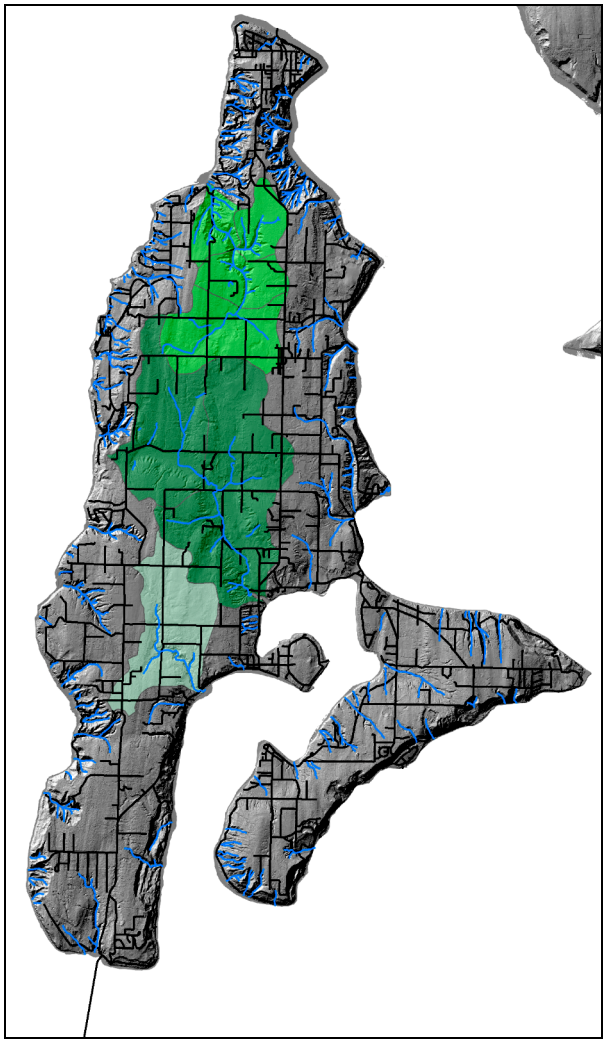

Fig. 3. Closed Basins on Vashon-Maury Island, courtesy of King County.

If a "significant hydraulic continuity [exists] between surface water and the proposed ground water source, any water right permit or certificate issued shall be subject to the same conditions as affected surface waters."[32] Since permits for the beneficial use of surface

[31] WASH. ADMIN. CODE § 173-515-040.
[32] *Id.* § 173-549-060.

waters "must be conditioned to protect the minimum levels established by code for each river basin," so must permits for groundwater when interconnected with surface waters.[33]

Case law in various appellate court decisions in Washington has clarified this obligation to analyze an application to withdraw groundwater that may be interconnected to surface water. In *Hubbard v. State*, John and James Hubbard challenged Ecology's decision to conditioned permits to withdrawn water from wells on the maintenance of the Okanogan River's minimum flow rates. Even though the point of withdrawal was located several miles from the affected stream and the effect of the pumping would result in only small and delayed effects on the flow of the river, the Washington Court of Appeals ruled that the existence of a "significant connection (hydrologic continuity)" between the aquifer and the river supported Ecology's decision to issue a conditional permit.[34] This decision also affirmed that where surface and groundwater is connected, instream flows established by rule are treated as water rights and should be protected from impairment by any subsequent groundwater withdrawals.

More recently, in *Postema v. Pollution Control Hearings Board,* the Washington Supreme Court ruled that the legal test of impairment (i.e., whether the withdrawal of groundwater affects the volume of surface water that it is connected with) is "no impairment" of an existing water right, the so-called "one molecule rule."[35] A finding of impairment, however, cannot be made merely by establishing a hydraulic continuity between groundwater and a stream where instream flows are not met part of the year.[36] Impairment must be determined on a case-by-case basis to demonstrate a specific harmful impact to an existing water right. Finally, the court ruled "that a proposed withdrawal of groundwater from a closed stream or lake in hydraulic continuity must be denied if it is established factually that the withdrawal will have any effect on the flow or level of the surface water."[37]

The *Postema* decision affirmed the *Hubbard* decision protecting instream flow water rights from impairment and clarified that hydraulic continuity alone does not automatically result in impairment of a stream flow. On VMI, these cases have supported administrative decisions to close much of the island to new water rights because of closed stream basins, and call into question continuing development using permit exempt wells.

F. Public Water System Coordination Act

In 1977, the Legislature passed the Public Water System Coordination Act. The Act allows water suppliers, working with the county governments, to develop a Coordinated Water System Plan (CWSP) within a defined geographic area.[38] The plan must include, among others, the following key provisions:

- Designation of future service areas;
- Identification of interties and other shared facilities;

[33] Hubbard v. State, 936 P.2d 27, 29 (Wash. 1994).
[34] *Id.* at 30.
[35] 11 P.3d 726, 744 (Wash. 2000).
[36] *Id.* at 741.
[37] *Id.*
[38] *See* WASH. REV. CODE Ch. 70.116.

- Use of consistent design standards and fire flow requirements;
- Development of strategies for small and failing water systems; and,
- Establishment of satellite water system management requirements for new water systems constructed within a water suppliers service area.

A CWSP was established for Vashon Island in 1990.[39] The CWSP designated the present utility service areas on the Island as shown in Figure 2. The plan called for restriction of new water systems where service cannot be provided by an existing system, satellite management of new systems where direct service is not possible, and new legal alternatives for restriction of new private (one-connection) water systems. The plan also recommended further analysis of the groundwater supply capability and the development of a strong program to protect groundwater quality.

G. Growth Management Act

The Growth Management Act (GMA) provides a clear link between the development of land and water availability.[40] Under the GMA, persons applying for a building permit for a structure that will require drinking-quality water must provide evidence of an adequate water supply for the intended use of the building. The same concept applies to the subdivision of land where a developer must show there is an adequate water supply for the intended subdivision. The GMA also includes specific requirements to "protect the quality and quantity of groundwater used for public water supplies."[41]

King County has adopted a Comprehensive Plan, most recently updated in October 2008, and development regulations to implement the GMA.[42] The Comprehensive Plan contains a number of policies related to management of growth in relation to water availability on Vashon-Maury Island. The Comprehensive Plan establishes a clear preference for new development to be served by existing public water suppliers (Group A over Group B), but allows development on self-supply permit exempt wells if service cannot be provided in a timely and reasonable manner (this is also a requirement of the CWSP). GMA development regulations also protect Critical Aquifer Recharge Areas (CARAs). CARAs seek to protect areas overlaying aquifers used for water supply from land uses that could potentially be detrimental to the water quality. All of Vashon-Maury Island is designated as a CARA because of the Island's unique status as a sole source aquifer surrounded by saltwater.

H. Watershed Planning Act 1998

The Watershed Planning Act provides a framework to collaboratively solve water issues within Water Resource Inventory Areas (WRIAs), or watersheds.[43] It allows local governments and citizens to join together with advice from state agencies to develop

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[39] HORTON DENNIS & ASSOCIATES, VASHON COORDINATED WATER SYSTEM PLAN – AEGIONAL SUPPLEMENT, PREPARED FOR KING COUNTY (1990).
[40] *See* WASH. REV. CODE Ch. 36.70A.
[41] *Id.* § 36.70A.070.
[42] KING COUNTY, KING COUNTY 2008 COMPREHENSIVE PLAN UPDATE (2008), *available at* http://www.kingcounty.gov/property/permits/codes/growth/CompPlan/2008.aspx (last visited June 29, 2009).
[43] *See* WASH. REV. CODE Ch. 98.82.

watershed management plans. According to the Act, the plan shall, at a minimum, assess the WRIA's water supply and use, recommend strategies to satisfy existing rights and meet current use and future water supply needs. The plan may include strategies for setting instream flows, improving water quality, protecting or enhancing fish habitat and storage of water. The legislature supplies grants to support these local planning and subsequent implementation efforts.

Working with the Groundwater Protection Committee, King County completed a Watershed Plan for the Island in 2005.[44] The principal reasons for preparing a watershed plan was uncertainty about the amount and availability of groundwater, a local trend showing increasing nitrates in some wells, potential for degradation of Island streams, and potential contamination of the Island's sole source aquifer. The plan was completed at the local level, but State adoption of the plan has not been possible due to conflicts in other parts of the watershed (Water Resource Inventory Area 15). Nonetheless, the County, working with the GWPC, has proceeded to implement the plan through the various water resource management structures provided under state law. The current GWPC priorities for implementation of the VMI Watershed Plan recommendations include hydrology education, water conservation, and hydrologic sustainability.

I. Municipal Water Law

The Municipal Water Law (MWL) made a number of changes that affect delivery of municipal water supplies.[45] The new provisions:

- Clarify where municipal water utilities can use existing water rights and provide an option to change place of use to an approved water "service area" established in their water rights without going through Ecology's formal water right change process;
- Define which systems and suppliers are municipal utilities (retroactively defined municipal water suppliers as entities that supply water for municipal water supply purposes include systems that supply water to fifteen or more residential users or a population of sixty or more persons for over sixty days per year);
- Establish water use efficiency standards for municipal utilities and their customers, and allow utilities to impose a fee to fund conservation activities;
- Establish a duty for municipal water supplies to provide water service within their retail service area;
- Require the state Department of Health to ensure that water system plans are consistent with local Comprehensive Plans and development regulations adopted under the GMA, and other relevant plans;
- Allowing municipal water suppliers to retain water rights, including original priority dates, for water not yet fully used under certificates issued by the state; and
- Allow use of water for environmental "mitigation" such as increasing stream flows or sustaining water levels in wetlands."

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[44] VMI Watershed Plan, *supra* note 9.

[45] 2003 Municipal Water Supply – Efficiency Requirements Act, Chapter 5, Laws of 2003 Second Engrossed Second Substitute House Bill (SESSHB) 1338 (Chapter 5, Laws of 2003).

The constitutionality of multiple provisions in this statute has been challenged in court. The initial trial court ruling found that three provisions are unconstitutional, but the rest are not.[46] The trial court's decision has been appealed by all parties, and the Supreme Court will hear the case later this year or early in 2010.

The MWL is important to the Island because it establishes a "duty to serve" new growth within the designated service areas for Group A municipal water systems. The duty to serve means a utility is obligated to serve new development if they have the necessary water rights and can provide services in a timely and reasonable (cost-effective) manner. This provision will support implementation of the water service goals established in the Vashon Critical Water Supply Plan. In addition, the MWL provides protection against water rights relinquishment and increased flexibility for the Group A municipal water systems on the Island to determine where water rights may be used. This should allow those systems to more easily move water to increase the water supply where needed, as envisioned in the 1990 CWSP. Finally, the MWL requires each municipal water supplier to establish water conservation goals and publish an annual report documenting the progress they make toward achieving their goals. To the extent water utilities aggressively pursue conservation there will be increased protection for the finite water resources on the Island.

IV. Water Rights on Vashon-Maury Island

Water right data for Vashon-Maury Island from the State Water Rights Application Tracking System (WRATS) are presented in Table 2. The total annual volume (total acre feet per year) of water in water rights certificates and permits is 4,473 acre-feet (AF). 2,148 AF of that is surface water and the remaining, 2,325 AF is from groundwater sources.

The data presented in Figure 4 sorts the water rights into three broad categories (Domestic/Municipal, Agricultural, Other) based on primary purpose of use. Of the surface water rights on the Island, 68% of the annual volume is authorized for domestic/municipal purposes, 31% for agricultural use, and 1% for other purposes. Half of the agricultural surface water rights are granted for unnamed springs and individual users. Of the groundwater rights, 60% is authorized for domestic/municipal purposes, 10% for agriculture use, and 30% for other purposes. The reason for large percentage of "other" uses is due to one historic right (circa. 1960) of 640 AF for commercial activities.

[46] Lummi Nation, v. State of Washington, No 06-2-40103-4 SEA, Summary Judgment Order (July 11, 2008), *available at* http://www.ecy.wa.gov/programs/wr/rights/Images/pdf/muni/61108OrderGrantingInPartDenyingInPartSJMs.pdf (last visited June 30, 2009).

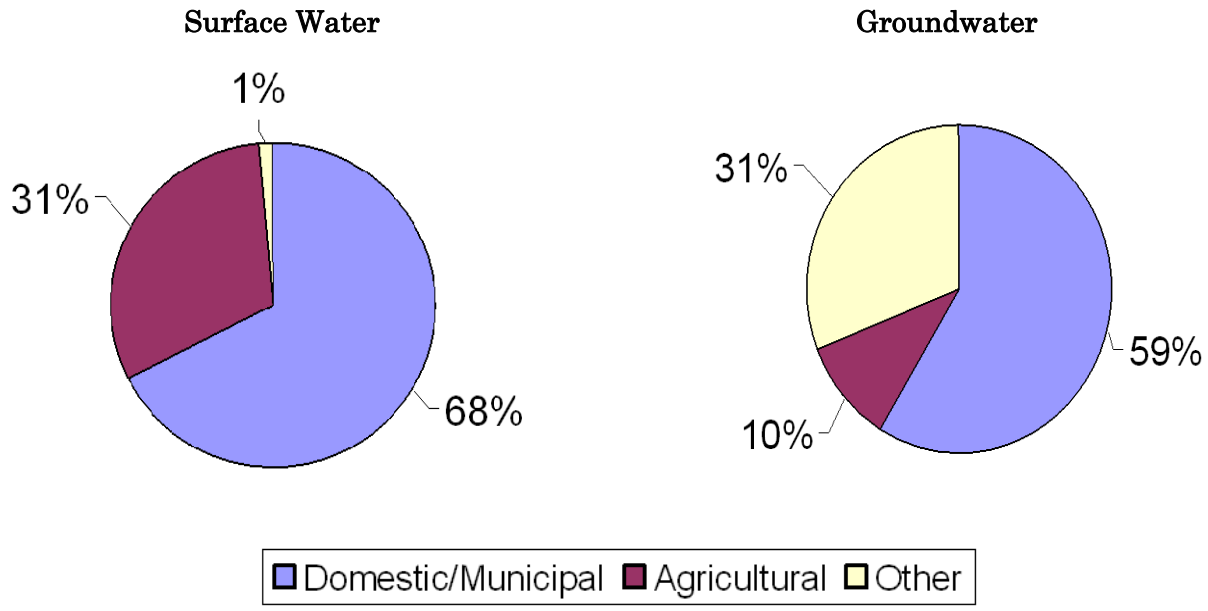

Fig. 4. Water Rights for Vashon-Maury Island.

Table 2. VMI Water Rights by Purpose of Use. (Adapted from VMI Watershed Plan)

		Domestic/Municipal			Agricultural			Other		
		Qi (cfs)	Qa (af)	Irr Acres	Qi (cfs)	Qa (af)	Irr Acres	Qi (cfs)	Qa (af)	Irr Acres
Surface Water	Certificates	6.79	1452.4	0	4.56	664.6	368.2	1.91	32	31
	Permits	0	0	0	0	0	0	0	0	0
	Applications	1.53	0	0.5	0.3	0	255	0	0	0
	Claims	0	0	0	0	0	0	0	0	0
		Domestic/Municipal			Agricultural			Other		
		Qi (gpm)	Qa (af)	Irr Acres	Qi (gpm)	Qa (af)	Irr Acres	Qi (gpm)	Qa (af)	Irr Acres
Ground Water	Certificates	2105.1	1218.5	0	452	218.6	171.5	495	702.3	3
	Permits	166.1	100.4	0	37.5	10	2	0	0	0
	Applications	2803	0	0	415	0	304	10	0	6
	Claims	200	74.3	0	0	0	0	0	0	0

Notes: Domestic/Municipal includes:
DS -Domestic Single, DM - Domestic Multi, MU - Domestic Municipal
Agricultural includes:
IR - Irrigation, ST - Stock Watering
Other includes:
CI - Commercial + Industrial, FR - Fire Protection, FS - Fish Progragation,
PO - Power, RE - Precreation + Beautification, WL - Wildlife Propagation

Surface and groundwater rights in the aggregate have nearly equal instantaneous pumping rights. Converting flow from cubic feet per second (cfs) to gallons per minutes (gpm), the Island has about 5,249 gpm in instantaneous surface water certificates and permits and 6,558 gpm in instantaneous groundwater certificates and permits.

The water rights of the seven largest Group A Public Water Systems (PWS) on the Island are presented in Table 3. Some of the larger Vashon- Maury Island Group A PWSs are fully using their water rights and have no additional rights to serve new connections. Other PWSs have not been accepting new connections because of operational or financial constraints in meeting state requirements to put their water rights to use. Vashon-Maury

Island has hundreds of unquantified "water claims" for both surface and groundwater. This is an important uncalculated category of users in addition to the number of exempt wells when assessing water availability for water rights.

Table 3. Water Rights of Group A PWSs on Vashon-Maury Island. (Adapted from VMI Watershed Plan).

	Surface Water				Ground Water			
	Certificates	**Permits**	**Applications**	**Claims**	**Certificates**	**Permits**	**Applications**	**Claims**
Water District 19	1.4 cfs 1012 AF	0.4 cfs 289 AF	0.5 cfs	--	250 gpm 300 AF	--	1340 gpm 445 AF	--
Heights Water Association	0.41 cfs 274 AFY	--	--	--	185 gpm* 236 AF*	42 gpm 47 AF	--	--
Burton Water Company	0.1 cfs	--	--	--	--	--	150 gpm	200 gpm
Dockton Water Association	0.39 cfs 41 AF	--	--	--	100 gpm 48 AF	--	--	--
Westside Water Association	0.05	2.0 cfs*	--	--	--	--	260 gpm 78 AF	--
Gold Beach Water Company	--	--	--	--	75 gpm 35 AF	--	500 gpm (2 wells)	--
Maury Mutual Water Company	0.334 cfs 100 AF	--	--	0.25 cfs	--	50 gpm 100 AF **	--	--

NOTES:
cfs = cubic feet per second
AF = acre feet
gpm = gallons per minute
* = Supplement water supply
** = Supplement water supply (total annual limit for all water rights)
-- = Not Applicable

Knowing the quantity of existing water rights on the Island is important to understanding how much of the surface and groundwater supply is already legally committed to particular uses and locations. For groundwater, water rights already exceed the Carr Report's estimate of sustainable productive capacity by 30% (2,324 AF for water rights vs. 1,791 AF for Carr's estimated productive capacity). Today, much of the agricultural use and "other" commercial use for both surface and groundwater has ceased, and the associated water rights that are unused could be found to have been relinquished for lack of beneficial use if the rights were adjudicated. The relinquished water rights could be reallocated to sustain stream flows and support planned growth.

The range of estimates of available groundwater for appropriation varies from 930 AF from Carr to 12,895 AF from the GWMP. Relying on the Carr Report (at the low end of the range), there would be no groundwater available and the aquifer would be considered over-appropriated. This is based on total annual quantity of water use authorized in groundwater certificates and permits, which is 233% of the resource. Reliance on the VMI Groundwater Management Plan (at the high end of the range), would suggest that only 17% of the resource has been appropriated.

V. Managing VMI Water Resources for Sustainability

A. King County Groundwater Protection Program

In 2001, King County created a countywide Groundwater Protection Program (GWPP) to provide a wide range of groundwater protection services.[47] The program divides the County into five groundwater planning sub areas under the guidance of a local groundwater protection committee for each area. Services provided by the County include:

- Updating and implementing groundwater management plans in coordination with water purveyors, tribal nations, state and federal agencies subject to funding;
- Providing technical expertise in groundwater, including geology, hydrology, modeling and mapping to identify critical groundwater recharge areas;
- Managing data including collecting, monitoring, mapping, reviewing, and reporting data on groundwater in King County;
- Providing education and support for public groundwater protection efforts in the unincorporated areas where services are not provided by water purveyors;
- Developing and implementing comprehensive planning policies and development regulation to integrate groundwater protection into management of public health, hazardous waste, surface water, storm water and wastewater;

B. Vashon-Maury Island Groundwater Protection Committee

On Vashon-Maury Island, the GWPC, established in 2001 as part of the GWPP, guides County groundwater protection efforts on the Island. The GWPC members were selected to include representatives from a variety of sectors of the community.[48] The VMI GWPC meets four times each year. Subcommittees meet between full committee meetings to advance the committee's work program. Each member of the committee is expected to coordinate with the entity the member represents.

Responsibilities assigned to the GWPC by King County include:

1) Advise the County executive, council and other affected agencies on the GWPP and implementation of the certified groundwater management plan;
2) Participate in implementation, develop and recommend modifications, and monitor implementation of the groundwater management plan;
3) Coordinate community groundwater protection activities in conjunction with the county and other affected agencies, including public education, public involvement and stewardship activities;

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[47] The Groundwater Protection Program is governed by Metropolitan King County Code, Ch. 9.14 *available at* http://www.kingcounty.gov/council/legislation/~/media/Council/documents/Clerk/CodeFiles/12_Title_9.ashx . Additional information on the Program is available at http://www.kingcounty.gov/environment/waterandland/groundwater.aspx .

[48] The entire list of voting and non-voting members can be found on GWPP's website at http://www.kingcounty.gov/environment/waterandland/groundwater/committees.aspx .

4) Recommend amendments to the local comprehensive planning policies that relate to groundwater protection and provide advice on state groundwater regulation;
5) Recommend groundwater protection services tailored to the unique needs of the groundwater management area and policies;
6) Review the County's annual groundwater protection work plan and the three-year work plan that identifies long-term needs for regional groundwater protection services; and
7) Make recommendations on the distribution and use of aquifer protection funds.[49]

C. Vashon-Maury Island Watershed Plan

Starting in 2004, the GWPP worked with the GWPC to prepare a local Watershed Plan for the Island's portion of Washington State Water Resource Inventory Area 15. The principal reasons for preparing a watershed plan were uncertainty about the amount and availability of groundwater, a local trend showing increasing nitrates in some wells, potential for degradation of Island streams, and potential contamination of the sole source aquifer. The GWPC prepared the Watershed Plan pursuant to guidelines adopted under the 1998 Watershed Planning Act. The watershed plan is not mandatory and having the plan does not provide legal authority to regulate water resources. The plan, however, does constitute a recognized water resource management policy document that reflects Ecology's current policy and legal framework for managing surface and groundwater as a single, hydrological continuous natural resource.

Within the 2005 watershed plan, the GWPC provides extensive recommendations to protect and ensure the Island's water supply quantity and quality. The seven highest priority action items are as follows:

1) An ongoing Island-wide education program should be developed to inform Islanders about groundwater resources, how drinking water is supplied, water availability, and water quality issues. The education program should include alternative water supply choices such as water retention, rain water harvesting, use of gray water, deepening of wells, groundwater recharge, water rationing in emergencies, reclaimed water, and desalinization;
2) A representative sample of Vashon-Maury Island exempt wells should be monitored for water use and volunteers should be solicited to participate in this study;
3) An education program should be developed and implemented that informs exempt well owners of the risks of aquifer contamination, and actions they can take to minimize the risk of contamination of their wells;
4) King County should seek funding and work with the State agencies to encourage removal of old or failing residential fuel storage tanks;
5) King County should encourage the use of demonstrated new and alternative on-site septic treatment technologies on Vashon-Maury Island;

[49] METROPOLITAN KING COUNTY CODE § 9.14.100, *available at* http://www.kingcounty.gov/council/legislation/~/media/Council/documents/Clerk/CodeFiles/12_Title_9.ashx .

6) Continue to implement and seek funding to expand the Public Health-Seattle & King County septic education program to inform property owners about septic system failures and steps they may take to ensure effective maintenance and operation of their system; and
7) King County and the GWPC should collaborate to develop an education program on pesticide and fertilizer use.

The seven priority policies from the 2005 Watershed Plan were added to the King County Comprehensive Plan in 2008, along with two additional priorities added at the request of the GWPC. These additional priorities are:

- King County should work with the Vashon community to define specific actions to implement the stormwater recommendations in the 2005 Vashon-Maury Island Watershed Plan within available resources.
- King County should protect the quality and quantity of groundwater on Vashon-Maury Island by measuring, monitoring, and reporting information on groundwater quality and quantity to provide the information needed to manage groundwater resources.

As recommended in the Watershed Plan, the GWPC has taken the responsibility to review the Watershed Plan recommendations and established priorities for implementation every two years. The Committee's 2007-2009 priorities include education, conservation, and sustainability.

D. King County Comprehensive Plan

Local governments in Washington experiencing a certain level of growth are required under the state's Growth Management Act to develop and periodically update a comprehensive plan to assure the growth is accommodated while protecting natural resources. Local governments are obligated to implement their comprehensive plan with formal development regulations (zoning, subdivision, critical areas, etc.) and capital facilities plans. State agencies and special purpose districts are generally required to conduct their operations in conformance with adopted local comprehensive plans. The Comprehensive Plan for King County, most recently updated in 2008, contains extensive policy support for the protection of the County's groundwater resources.

For all of the rural area in King County, including VMI, the Comprehensive Plan calls for protection of groundwater resources as follows:

- Implement Critical Aquifer Recharge Areas;
- Incorporate groundwater quality/quantity into land use and water service decisions;
- Implement adopted groundwater management plans with partner agencies;
- Retain a high ratio of permeable to impermeable surface area in the rural area;
- Evaluate the likely effects of climate change on aquifer recharge and groundwater;
- Educate the public to protect groundwater;
- Promote low-impact development to infiltrate storm water runoff; and

- Develop best management practices to promote aquifer recharge.[50]

Vashon-Maury Island is unique within King County in that it is an island community dependent upon a designated sole-source aquifer for its water supply. Given that a primary source of drinking water is groundwater, a higher level of protection of groundwater recharge is warranted on Vashon-Maury Island than in the rest of King County. In the 2004 update to the Comprehensive Plan, King County defined and regulated Critical Aquifer Recharge Areas (CARA) throughout the rural areas of the county to protect groundwater used for water supply. As mentioned above, all of Vashon-Maury Island was designated as a CARA because it is a sole source island aquifer surrounded by saltwater.

The 2008 Comprehensive Plan also notes that land clearing and building activities can reduce groundwater recharge and calls for low-impact development (LID) to protect and enhance native vegetation and soils, reduce impervious surfaces, and manage storm water at the source. These techniques are well suited to development in rural-residential zones like VMI and can be an effective way to protect groundwater quality and recharge.

Unlike the Comprehensive Plan, which is mandatory, the Watershed Plan is optional and there is no mandate to implement its provisions. To ensure implementation of the Watershed Plan, key policies have been incorporated into the Comprehensive Plan. Groundwater protection policies adopted specifically for Vashon-Maury Island as part of Comprehensive Plan include:

- Protection of the groundwater aquifer is of primary importance to Vashon-Maury Island;
- Plan density so that demands on water resources do not exceed capacity to provide supply without deterioration of quality;
- Water quality degradation which would be injurious to existing or planned uses should not be allowed;
- Water resource areas highly susceptible to groundwater contamination and watersheds should be maintained in non-intensive uses at low densities;
- Public water systems on VMI shall assess the ability of water sources to serve growth. Expansion of the system should be prohibited if analysis shows risk to the adequacy of service including quality of water being provided to current users;
- Special consideration should be given to the impacts of new development on VMI's groundwater resources. This should apply to major developments, development in areas highly susceptible to contamination, or development near public water supplies;
- The quantity and quality of VMI's groundwater supply should be monitored, along with building permit and subdivision data, to determine if planned densities can be achieved. If new information indicates the groundwater supply is endangered, the County shall take immediate steps to ensure new development does not impair the groundwater supply; and
- Work with residential builders to encourage the use of low-impact development practices.

[50] *See* King County Comprehensive Plan, *supra* note 42, at 4-49-4-50.

E. Sustainable Water Resource Management Strategy

In 2008, the GWPC developed a working definition, goals, and indicators of sustainable water resources for the island. The definition, taken from the Watershed Plan, states that sustainable water use for the Island is the rate at which neither water quality nor available quantity is perceptibly diminished.[51]

In order to preserve the quality and quantity of Island water resources, the GWPC set the following sustainability goals.

- An "early warning system" of sustainability indicators should be developed to identify any decline in water quality and quantity since once a decline is identified it is very difficult to reverse;
- Water quality and quantity should be maintained at current levels without decline;
- Groundwater recharge should be protected and enhanced and the water supply should be used more efficiently;
- Water resource needs of all future inhabitants should not be compromised and both preventive and adaptive strategies should be used to maintain and enhance the integrity of the hydrologic system; and
- Best available science should be used in the water resource sustainability decision-making process.

The GWPC identified eleven indicators they will use to measure the status of Island water resources. The GWPC plans to use the sustainability indicators to measure progress in meeting the goals outlined above and implementing the Watershed Plan. The GWPC will assess the indicators and monitor changing water resource conditions to identify trends. The GWPC will identify specific strategies in response to observed trends to achieve the sustainability goals as needed.

Three indicators were selected to monitor the sustainability of water quality and determine if trends indicate the water quality is being maintained or improved. For groundwater the Group A and Group B water system wells, along with nineteen long-term monitoring wells used in the Water Resource Evaluation (WRE) for the VMI Groundwater Management Plan, will be monitored to determine if they meet or exceed drinking water quality standards. Surface water quality in the streams sampled in the WRE will be monitored to determine if it meets or exceeds surface water quality standards for the protection of aquatic life. For marine water quality, oxygen and bacteria in Quartermaster Harbor will be sampled and tested to determine if it meets surface water quality standards.

Three indicators were selected to monitor sustainability of water quantity and determine if trends indicate that water quality is being maintained or improved. For seasonal groundwater levels, ten King County monitoring wells used in the WRE and two private wells near the Glacier gravel mine, along with volunteer wells, will be monitored to determine if water levels are maintained or improved over time. Summer stream flows from

[51] VMI Watershed Plan, *supra* note 9, at Appendix B.

five stream gauges maintained by King County (Shinglemill, Judd, Tahlequah, Fisher, and Green Valley) and one stream gauge maintained by Water District 19 (Beal) will be monitored to see if flows are maintained at current levels or increased. Stream flashiness will also be measured to determine if it is maintained at current levels given the impacts associated with increased development and creation of impervious area.

Two indicators were selected to monitor sustainability of the ecosystem. Stream benthic macro invertebrate populations will be measured by conducting annual monitoring at eleven locations to calculate the Benthic Index of Biologic Integrity (BIBI) and track trends over time. Salmon populations in Island streams will be measured using data from the Salmon Watcher Program, which estimates the number of salmon returning to spawn on the Island.

Three indicators were selected to determine the sustainability of water use and management. Annual total Island-wide water consumption will be compared to total population to determine if the ratio of water use increases. The summer water use peaking factor (relative to winter use) will be monitored to determine if the summer peaking factor increases. Finally, the progress in implementing the Watershed Plan will be tracked to monitor implementation of GWPC priority items that are accomplished and total accomplishments since the plan was completed.

Should additional funding and/or data become available, the GWPC would like to monitor six additional indicators of sustainability including:

- Land cover to determine if it is being maintained in a manner that preserves a natural hydrologic cycle;
- Public attitudes and involvement to see if they demonstrate strong support for water resource stewardship;
- Aggressive implementation of LID techniques to protect groundwater recharge/quality and stream flows/water quality;
- Enhanced design, operation, and maintenance of on-site septic systems to protect ground and stream water quality;
- Reduction in the amount of pesticides applied to VMI landscapes to protect and enhance ground and stream water quality; and
- Stream basins are opened or closed to water allocations based on better understanding of surface water/groundwater interaction and sustainability.

Using the sustainability measures outlined above, the GWPC plans to continue efforts to implement the recommendations contained in the Watershed Plan. One of the first tasks will be to revise the scope of the ongoing monitoring under the WRE to compile, evaluate, review, and report the findings on sustainability indicators to the GWPC and other interested parties, including the general public, on an annual basis. The GWPC also plans to identify and evaluate hydrologic management and sustainability techniques being developed in other island communities for application on VMI.

A new sub-area model, "nested" within the Island-wide WRE model, could be prepared to assess the adequacy of the water supply to meet the projected water needed to serve the land uses identified by the Comprehensive Plan. Additional modeling could be very helpful

within selected sub-areas of Vashon-Maury Island including the Town Center area. Finally, the GWPC could evaluate the potential benefits or liabilities and feasibility of modifying the State Water Resource Inventory Area to create a separate designation for VMI. This could permit the VMI Watershed Plan to be adopted by the State and open new Watershed Plan implementation funding opportunities.

VI. Challenges

A. Models and Data

The models used by the VMI WRE are a great tool for assessing water resources, yet they have limitations. One of the limitations is the lack of available data. The lack of information on water use is a significant impediment to management of the finite water resources on Vashon-Maury Island. Many of the main water users on the Island have limited or no usage data. In particular, the modeled water usage data from the Group B Public Water Systems (PWS) withdrawals and exempt wells are based on assumptions about average water use.[52] Exempt well use data collected by the WRE to date has shown that average household water use can vary widely from a little as 30 to over 400 gpd. The state Department of Health (DOH) currently requires total source meters on all Group A System sources and also requires annual reporting of water use by customer category. New DOH water use efficiency requirements will require Group A systems to install meters on all customer services by 2017. Public Health-Seattle King County requires total source meters for all Group B systems, but does not generally receive, compile, or report the water used by them. Ecology has the authority to require meters on all exempt wells by rule but has not done so on the Island. Creating a uniform metering requirement to report the use of water from all water users on VMI, in combination with coordinated reporting requirements and enforcement, would allow better water management using existing modeling tools in combination with conservation, education, and outreach efforts.

Another challenge to the WRE modeling is that the Island's geology and aquifer system is much more complex than the model. This limitation affects the accuracy of the water resources assessment. The present Island-wide assessment is a good scale of assessment for determining an Island-wide water balance to use for modeling potential impacts of build-out under existing zoning and climate change. However, for smaller areas of concern like the water utilities with supply limitations, refining this data to greater detail becomes very important in creating a useful tool for managing the localized water resources.

B. Water Rights and Exceptions

Another significant challenge to managing water resources on the Island is the continued construction of exempt wells within the drainage basins of streams that are "closed" by state rules to further appropriations of water. The designation of a "closed" basin is based on the Washington Water Resources Act, which as mentioned previously, provides administrative rule authority to set minimum flows to ensure that stream flows are maintained for fish and other environmental values. The designation of a closed basin is

[52] VMI Phase I Modeling Report, *supra* note 12.

also based, in part, on estimates of how much water is being used within the basin boundaries.

The "closed" basin designation is not related to the sole source aquifer designation on VMI, as they were done by different agencies (Washington State Ecology and U.S. EPA, respectively) at different times and under different criteria. As discussed above, Ecology closed the major drainage basins on the Island by rule in 1951 (Judd Creek) and 1981 (Shinglemill and Fisher creeks). In 1994, the EPA designated the aquifer under VMI as a sole source aquifer under the federal Safe Drinking Water Act.

Once a basin has been closed, the ability of a public water system within the basin to get new and/or expanded water rights is quite limited. As a result, much of the demand for new development on the Island is being met with wells "exempt" from the requirement to obtain a water right. To date, the impact of "exempt" wells on availability of water within the closed streams or senior water rights has not been evaluated. On the Island, these wells continue to be installed and used for domestic water supply even within closed basins (see Figure 5).

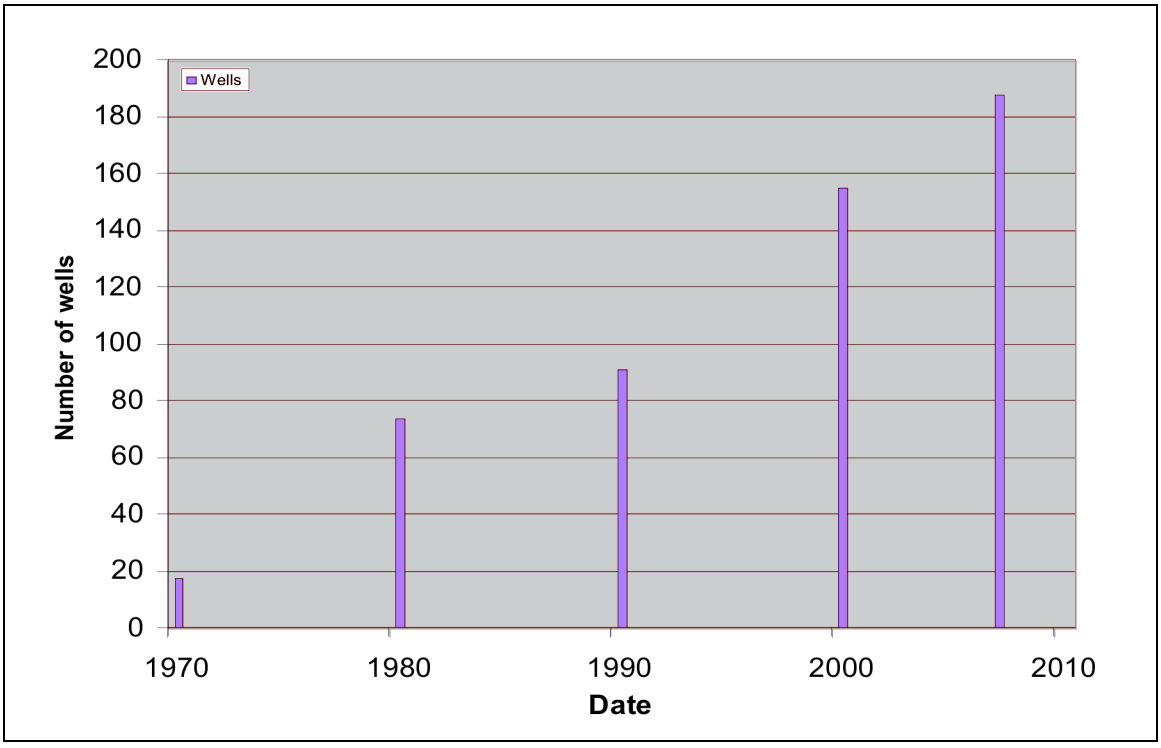

Fig. 5. Number of new water wells on Vashon-Maury Island by decade. The last year with available data is 2007. Each period is the total of wells drilled during the preceding ten years. For example, the figure for the year 2000 shows 155 wells drilled from 1991 to 2000. Reporting of wells did not start until mid-1970. Ecology estimates that up to 20% of wells drilled prior to 1990 are not reported.

On VMI, no new water rights have been issued by Ecology since 1990. As a result, water availability has become associated with the often contentious issue of new growth on the Island. Vashon-Maury Island is zoned "rural," which typically has 1 unit per 5 acres or 1

unit per 10 acres density limits. The King County Comprehensive plan for the Island has designated higher density areas within the Vashon Town Center.

The Town Center area is located in the Island's largest water system service area (Water District 19) to help focus growth. However this water system does not have any available water "shares" for new customers due to the limited success with production from new water supply projects developed under pre-existing water rights and the limitation on securing additional water rights within the closed basins of Shinglemill and Judd Creeks. Complicating the issue, Water District 19 has a conservative (high) water reliability factor to accommodate periods of peak demand during the summer and limited ability to implement aggressive water conservation or storage strategies.

At present, state and county policies continue to authorize new exempt wells as water supply for both new development and irrigation on VMI. Ecology allows the new wells through the groundwater right permit exemption under the Groundwater Code, and King County allows them through their determination that exempt wells constitute an adequate water supply under the Growth Management Act (GMA). To date neither agency has fully addressed the potential conflicts with new exempt wells being constructed within closed basins and/or existing water system service areas.

The GMA does require a local government to determine that there is an adequate supply of potable water before it can issue a new building permit or a subdivision approval. In response to the GMA, King County requires a Certificate of Water Availability (COWA) from a water service purveyor. This certificate demonstrates that the public water system has water available to serve the new connection or connections being proposed. If a water purveyor cannot serve the development in a timely or reasonable manner, then a commitment by the property owner to construct an exempt well, consistent with all applicable codes, is sufficient to allow the new development to proceed. Use of exempt wells has allowed continuing growth within closed basins and within water district service areas that have no available water shares on VMI. The full impact to VMI water resources from continued growth using exempt wells is not clearly understood due to the lack of water use data for such wells.

Ecology is the state agency responsible for administering the state's water rights and maintains a database of the recorded water rights for VMI. However, Ecology does not track current water use under those water rights, and thus does not know how much water is currently being used or whether the water being used by new exempt wells is affecting senior water rights. The lack of water use information highlights the need for better data collection, reporting, and, potentially, enforcement of water use limits. As noted in the discussion on water rights, where historic agricultural or commercial water uses on VMI have ceased and their associated water rights are unused, the rights could be relinquished for lack of beneficial use if the rights were adjudicated. The relinquished water rights could be reallocated to better sustain stream flows in the closed basins and support planned growth in the Vashon Town Center.

C. Laws, Plans, and Institutions

Getting large Group A water systems to implement a coordinated approach to provision of water service and to serve all new development within their service area is another challenge to effective water resource management on the Island. The seven largest Group A water systems on VMI, shown on Figure 2, formed a Water Utility Coordinating Committee and prepared the Vashon Coordinated Water System Plan (CWSP) in 1990.[53] The Vashon CWSP identified several objectives for the plan, including to:

- Coordinate water system development with land use plans/policies;
- Determine the most efficient means to provide adequate water service throughout the Critical Water Supply Service Area including direct service or satellite management of new small water systems; and
- Identify options for cooperative development of water facilities.

The CWSP is part of the County code and the King County Comprehensive Plan requires water service to be provided consistent with CWSP. Under the CWSP, water utilities have the authority to serve any new water use and manage any new small water system in their service area. On VMI, the larger water systems have agreed, in principle, that they have a duty to serve new development in their service area.

In practice there is limited authority for the County to mandate implementation of the CWSP, because the Washington State Department of Health, which regulates the Group A water systems included in the Plan, gives water utilities the discretion to:

- Set individual levels of reliability to meet peak water demand;
- Define individual conservation objectives and programs;
- Establish individual policies to guide provision of water service; and,
- Decide whether the water system will fund efforts to supply the water needs of new growth.

The water system discretionary factors outlined above in combination with limited availability to secure funding beyond water rates and facility connection charges, has resulted in incomplete implementation of the CWSP. Water system interties and joint supply projects are also possible under the CWSP; however few have occurred due to their high cost and limited benefit to the individual water systems. As a result, new growth continues to occur within the utility service areas using exempt wells without benefit of direct connection to the Group A water system or satellite management of the new exempt well.

In 2003, the Legislature passed the Municipal Water Law (MWL) with the intent to improve provision of water service and management of water resources. Key provisions of the MWL that may help address the water resource management challenges identified on VMI include the "duty to serve" new development when water can be provided in a "timely and reasonable" manner and the "duty to conserve" water along with the ability to fund conservation through revenue collection authority. The MWL also provided additional

[53] *See* Vashon Coordinated Water System Plan, *supra* note 39.

certainty for municipal water rights by clarifying that they can be used to provide water service to the entire service area designated in their water system plan provided it is approved by the DOH.

The full effect of the MWL is not clear at this time as water purveyors, regulators, and the courts are still working to fully define how the provisions of the law will be interpreted and implemented. In the process, some provisions of the law have been challenged as unconstitutional, and a case is currently pending in the Washington Supreme Court.[54] Ideally, the outcome will help facilitate the water service objectives first articulated in the CWSP, promote better conservation of the finite water resources on the Island, and potentially enable VMI water systems to define new water service areas that could allow movement of water from areas of surplus to areas of shortage on the Island.

D. State and Local Authority

The final challenge to effective management of water resources on VMI considered in this paper is effective coordination between the multiple state and local agencies charged with responsibility for provision of water service and management of water resources on VMI.

As noted previously, Ecology is the lead agency that deals with water rights and permits for construction of wells. DOH is the lead agency regulating Group A water systems and has signed joint plans of operation with local health jurisdictions to delegate responsibility to them for the smaller Group B water systems. Decisions on the adequacy of water supply for new development and approval of land use plans affecting water demand, as well as protecting critical water supply areas rests with local government (King County). Within King County, there are multiple departments and programs that manage water resources. These include Public Health Seattle-King County (drinking water, on-site sewage, hazardous waste), Department of Development and Environmental Services (comprehensive land use planning and development permitting), and Department of Natural Resources and Parks (water management policy, groundwater protection, and stormwater management).

The challenges associated with coordinating water resource policy, regulation and actions for the multiple agencies are not new nor are they unique to King County. While the coordination challenges for VMI are not unique, the finite water supply on the Island does present a unique challenge to meeting the sustainable water resource management objectives established by the GWPC.

VII. Sustainable Water Resource Management Opportunities

A. Sustainability Report Card

The GWPC sustainability indicators utilize data collected as part of the Water Resource Evaluation project. When the information is compiled, the GWPC plans to report the

[54] The Washington Supreme Court accepted direct review of *Lummi Nation v. State of Washington* in March 2009. Additional information on this challenge to the Municipal Water Law is available at http://www.ecy.wa.gov/programs/wr/rights/muni_wtr.html .

results in a sustainability report card. Similar to the federally mandated annual reports on drinking water quality published by each Group A water system, the sustainability report card will communicate a snapshot of current conditions and trends for each indicator. The report card format will allow the GWPC to concisely present its findings to the island residents, water purveyors, resource managers, and governing agencies.

Monitoring the sustainability indicators and evaluating observed trends can provide an opportunity to address any developing water resource issues, ideally before they become critical problems. The sustainability indicator monitoring/evaluation program is especially important to compliment and compensate for challenges facing the WRE modeling effort. The indicators will also be helpful to guide implementation priorities for the VMI Watershed Plan and inform decision-makers on the effects of water resource management policies relating to VMI in the Comprehensive Plan. Finally, the sustainability indicators can help guide the water system planning efforts of individual utilities, the Critical Water Supply Plan, and the state agencies that manage water resources on the Island. Working together through the GWPC to collect, evaluate, and develop planned responses offers the opportunity for all of these parties to coordinate their resource management efforts for the Island.

B. Conservation

The GWPC has selected conservation as one of three current priorities for implementation of the VMI Watershed Plan. The Committee recognizes that conservation efforts are a key sustainability management tool and must be based on an accurate understanding of water use. The Island has a population of about 10,100, an average household size of 2.4 persons, and a total of 4,867 residential units.[55] Public water systems serve over 90% of the population on Vashon, and there are an estimated 800 exempt wells on the Island.

Most of the public water systems have individual service meters and pay progressively higher rates for water used beyond base (non-irrigation) flows via an inverted pyramid rate structure. To a water system, conservation by customers in response to an inverted pyramid rate structure reduces the variable costs of supplying peak water demand, as opposed to the fixed costs of supplying baseflows. However, for most VMI water systems, fixed costs are high relative to variable costs. The primary opportunities for water conservation cost savings are in reduced energy costs to pump the water, reduced chemical treatment costs, and hard-to-quantify benefits like the reliability of water supply during a drought. Water conservation may also reduce certain fixed costs, by allowing pumps and some pipes to be downsized either upon their scheduled replacement or during system expansion.

Because the variable costs are relatively small, financial savings to a water utility from a water conservation program are likely to be small as well. A VMI water system may need to manage a water conservation program carefully to ensure that the costs of the program (both direct costs and reduced revenue from reduced sales) do not exceed the savings that can be realized through the program. Alternatively, water conservation costs could be rolled into the water rate base and considered as an essential strategy to meet demand for new

[55] U.S. Census Bureau 2000 Summary Population and Housing Characteristics, *supra* note 7.

service and improve system reliability. While it can be difficult for small VMI water systems to analyze these economic tradeoffs, the DOH does provide guidance on cost-effective water conservation measures for small systems.[56]

State statutes also require water utilities to consider using rates as a way of achieving conservation. The Municipal Water Law (MWL) passed in 2003 established new water use efficiency requirements for municipal water suppliers as small as fifteen connections (i.e., all Group A water systems) complementing prior authorization to fund conservation activities. This law may improve water conservation by requiring that goals and programs be established to overcome obstacles to pursuing conservation measures as a source of water for new supply and improved system reliability. However, the legal challenge to the MWL pending in *Lummi Nation* may limit its application to public water systems thereby excluding the privately owned utilities and associations from the mandate to conserve.

The GWPC's conservation work plan calls for collecting current water usage data from all public water systems and a sample of exempt well owners. The water use data is to be compared to the number of housing units to develop current averages for household water use. The seasonal difference in water use will be determined to identify winter or base water demand versus summer or irrigation water demand. To estimate potential savings for base water use, the age of Island housing units as reported in the Census will be compared to average water use efficiencies observed in similar-aged housing units for utilities that have prepared conservation assessments within the Puget Sound region. An estimate will be developed of the potential base water savings if existing island households were retrofitted with current water saving fixtures and appliances to provide an estimate of potential domestic water savings. There is potential for additional water conservation by reducing each household's demand for irrigation water. The Committee will assess the potential savings that could be generated by reducing irrigation water demand and apply the irrigation saving metric to existing and projected future water use. Compiling the estimate of potential water savings from increased conservation will allow the GWPC to evaluate the potential reduction that could be achieved in existing and future water demand through the implementation of higher conservation standards.

The conservation requirement mandated by the MWL for Group A water systems will provide a mandate to implement conservation for all Group A water systems on VMI subject to pending appeals. However, the mandate is only to adopt a utility-by-utility goal and program, which may or may not lead to consistency across the VMI. Basic conservation measures, such as metering and effectively reporting water use on the many Group B water systems and self-supplied individual systems on VMI, should be required through Ecology well drilling permits and the local public health drinking water program. Exempt wells for private users and small Group B water systems generally do not have individual service meters and pay only for the cost of water production so there is little incentive to reduce peak irrigation water demand. According to a recent analysis, residences on exempt wells tend to use more water than those on public service.[57] The Island volunteers who have allowed the WRE to install meters on their exempt wells have shown that awareness of water use brings about self-conservation. One of the volunteers participating in the

[56] VMI Watershed Plan, *supra* note 9.
[57] Seattle Public Utilities Consolidated Report on Water Supply in King County, *supra* note 17.

metering program on VMI saw that the large volume of water his household was using for irrigation correlated with the dramatic seasonal drop in the water level in their well and subsequently changed his irrigation practices to reduce the impact on the groundwater table.

C. Exempt Wells

The scientific understanding and legal recognition of hydraulic continuity between groundwater and surface water calls into question the continued development of permit exempt wells within basins closed to further appropriation of surface water. If the WRE modeling or sustainability indicator monitoring demonstrate that existing or potential future water use is unsustainable, then Ecology rulemaking authority could be used to limit or mitigate the impact of development utilizing new exempt wells. This step would increase protection for senior water rights including instream flows. Ecology has adopted administrative rules to manage or restrict use of exempt wells to protect instream flows and other senior water rights in a variety of locations around Washington State with varying results as explained below.[58] Ecology also has authority under Wash Rev. Code § 18.104 to restrict well drilling to ensure protection for areas needing intensive management. Alternatively, legislative changes to the exempt well statutory provisions may be warranted to address exempt wells issues on Vashon-Maury Island and statewide.

D. Exempt Well Legislation

Statewide, new legislation could be the most effective way to manage the continuing construction of permit exempt wells within areas closed to issuance of new water rights. Comprehensive exempt well legislation, which would have significantly modified existing provisions regarding exempt wells, was proposed, but not passed, by the legislature in its 2009 session.

Senate Bill 5888[59] would have made significant changes to the exempt well provisions to better address groundwater management. The proposed changes would have preserved the exemption from water right permit requirements *as long as the beneficial use or uses of the groundwaters do not individually or collectively exceed five thousand gallons a day* for the following purposes:

- A single domestic use or a group domestic use by six or fewer residences;
- Watering of a noncommercial lawn or garden not exceeding one-half acre in area;
- Stock watering use;
- Commercial irrigation not exceeding one-half acre in area; and
- Industrial or commercial use.

The legislation would have clarified that a permit exempt groundwater withdrawal may be supplied from more than one well, but all the wells combined may not exceed a total daily

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[58] *See* WASH. REV. CODE Ch. 90.03 and 90.44.

[59] S.B. 5888, 61st Legislature, Regular Session (Wash. 2009), *available at* http://apps.leg.wa.gov/documents/billdocs/2009-10/Pdf/Bills/Senate%20Bills/5888.pdf (last visited June 30, 2009).

withdrawal of 5,000 gpd. However, the proposed legislation made no provision to automatically limit the number of exemptions per aquifer based on calculated water availability.

Meter requirements would have been strengthened under the proposed legislation by requiring that *any* new permit exempt use *shall* be metered and records of the amounts withdrawn retained. Existing reporting requirements would have been explicitly integrated into the water right permit exemption. Implementing the metering and reporting provisions would have helped provide data needed for evaluation of VMI water resources, conservation awareness, and enforcement of exempt well water use limits if necessary.

The legislation would have prohibited new water right permit exempt withdrawals within the service area of a water system that has sufficient capacity to provide water under existing water rights, provided a purveyor determines that their system can provide water service on a timely and reasonable basis and is willing to provide the service. This provision would have helped address the continuing development of permit exempt wells inside Group A water system service areas on VMI.

The legislation would have clarified that permit exempt groundwater rights may be relinquished or abandoned through nonuse in the same manner as other water rights and that permit exempt groundwater rights are subject to regulation in favor of senior water rights in the same manner as any other water right on the basis of priority date. The legislation also would have clarified that the priority date for a water right established through the groundwater permit exemption is the date that water is first put to beneficial use for the exempt purpose in question versus the time the well is drilled.

The proposed legislation would have established a new definition of "stock watering use" to limit water use to providing water for domestic farm animals for drinking and for maintenance of animal health and welfare. The proposed definition would have clarified that stock watering does not include water used for irrigation of vegetation, production of products or dust control, all of which constitute industrial or commercial water uses under this section. The stock watering clause could be of importance on VMI should another significant livestock ranching operation start on the Island like the Misty Isle Farm.

Finally the law would have provided that by December 1, 2009, the State would identify, and rank in priority order, all areas of the state in which the metering of existing groundwater withdrawals, including permit exempt withdrawals, is needed to effectively manage the waters of the state and convey the information in a report to the legislature. The report was to include an estimate of the cost to the state to require such metering and to manage the resulting data and the cumulative cost to water right holders to implement comprehensive metering and reporting of groundwater in the highest priority areas. Metering existing groundwater withdrawals on the Island could be an effective way to provide data needed for VMI water resources evaluation, conservation awareness, and enforcement of exempt well water use limits if necessary.

While the new exempt well legislation outlined above did not pass in 2009, it does provide a comprehensive outline of the reforms needed to effectively manage exempt wells in Washington State and on VMI. While many of the proposed legislative provisions can be

implemented administratively by Ecology, it is time-consuming, expensive, and may ultimately prove to be ineffective to approach resource management at the state level on a case-by-case basis. As the GWPC evaluates the need for better control of exempt wells as part of their sustainability effort, the legislation proposed in 2009 could provide an outline of the measures need to effectively manage the impacts of exempt wells on Island water resources.

E. State Rulemaking Authority to Protect Surface and Groundwater

State administrative rules are another tool to achieve sustainable management of water resources on VMI. Ecology is charged with regulating the appropriation and beneficial use of surface and groundwater.[60] By law, Ecology has broad powers to manage water resources and adopt administrative rules. It is directed, as a matter of high priority, to ensure that the waters of the state are utilized for the best interests of the people. Ecology, whenever necessary to carry out this policy, may by rule:

- Reserve and set aside surface waters, and supporting groundwater for beneficial utilization in the future;
- Withdraw various surface waters and supporting groundwater from additional appropriations until sufficient information and data allow for the making of sound decisions;
- Limit withdrawals of groundwater so as to enforce the maintenance of a safe sustaining yield from the groundwater source and protect prior appropriation against subsequent appropriators from the same groundwater source so that any withdrawals by a subsequent appropriator of groundwater are limited to an amount that will maintain and provide a safe sustaining yield in the amount of the prior appropriation;
- Where the total available supply of groundwater is inadequate for the current needs of all holders of valid rights to withdraw public groundwater from a particular groundwater area, order the aggregate withdrawal from such area decreased so that it shall not exceed such available supply. Such decrease shall conform to the priority of the pertinent valid rights and shall prevail for the term of shortage in the available supply;
- Require as a condition of *all* surface water rights, metering of diversions, and reports regarding the amount of water being diverted and to require *new* withdrawals of groundwater to be metered and reported, as a condition for a new water right permit.

Ecology has increasingly been required to adopt administrative rules to protect groundwater in addition to surface water.[61] Examples of this trend that could be beneficial to VMI include a 2005 Entiat river basin instream flow rule that subjects all new well

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[60] *Id.*

[61] In the Entiat and Walla Walla River basins, rules were adopted to implement watershed plans developed under the Watershed Planning Act of 1998. In the Stillyguamish River basin a rule was adopted as a result of a legislative budget proviso. In the Methow River basin a rule was adopted as a result of the "Chelan" water agreement and a pilot project there. In the Kittitas and Johns Creek drainage basins rules were adopted in response to citizen petitions.

withdrawals (including exempt ones) to instream flows, but provides reservation for uses not subject to instream flows.

In 2008, in Johns Creek, the Squaxin Island Tribe petitioned Ecology for a rule to prohibit any future withdrawals from the basin. Although Ecology agreed with the Tribe's concerns that unchecked use of exempt wells for single homes and multi-home developments might reduce the amount of water flowing in Johns Creek, Ecology denied the petition. Ecology acknowledged that "exempt" wells can be drilled for domestic use without obtaining a water right but noted that state law limits withdrawal to no more than 5,000 gpd and the water can only be used to irrigate lawns and gardens up to one-half acre in size. Citing other steps that can be taken first before deciding to ban any future water withdrawals from the basin, Ecology outlined a process and commitments the agency is willing to undertake to address the Tribe's underlying concerns including:

- Working with local government and the Tribe to find funding for a groundwater study of the area;
- Signing a Memorandum of Understanding with Mason County to reinforce the county's preliminary water conservation approaches, such as low-impact development standards, water conservation, and in-house use for future residential housing;
- Clarifying to the county the state's role and position in making water availability determinations; and
- Looking to increase flows in Johns Creek, when a regional water supply extends to the Johns Creek area.

Unlike the rules on VMI that focused only on protecting instream flows, these rules limit groundwater withdrawals. While the rules impose limitations on permit exempt wells, they offer little assurance or mechanisms for compliance.

F. Growth Management Strategies

Under the Growth Management Act (GMA), groundwater resources are to be protected as "critical areas," and the "best available science" is to be used to develop policies and regulations to protect the functions and values of critical areas. The land use element of the King County Comprehensive Plan must protect the quality and quantity of groundwater used for public water supplies and must provide long-term protection of surface water.[62] If the WRE modeling results or sustainability monitoring demonstrates that more needs to be done to provide long-term protection of groundwater resources, the GMA provides a variety of tools.

Given that the surface water baseflows on the Island are dependent on groundwater and that together surface and groundwater is the only source of drinking water, a higher level of protection for the groundwater recharge areas is warranted on Vashon-Maury Island. The current zoning designations on the Island would allow an estimated 50% increase in

[62] King County 2008 Comprehensive Plan Update, *supra* note 42.

population at build-out according to one scenario.[63] The GWPC will be able to use the new information developed by the WRE modeling and the sustainability indicator monitoring to better evaluate sustainability of planned densities under the existing comprehensive plan and zoning. If necessary, the zoning could be modified to lower total zoning build-out to a level that would sustain existing development and water dependent resources.

The role of the GMA comprehensive plan in protecting water resources was further strengthened by passage of the Municipal Water Law (MWL) in 2003. Under the MWL, the water system plans of municipal water suppliers are required to be consistent with the GMA comprehensive plans. The MWL also set forth a general duty to provide retail water service within the water systems' service area. These efforts were designed to ensure that municipal water systems would deliver future water service consistent with the provisions of the local comprehensive plan. To date, implementation of these provisions has proved challenging in King County and other counties. Administrative rules to implement this provision were not available until the end of 2007. The "elements" of consistency specified in the rule were limited to the same four items that have been in the DOH planning guidance for over fifteen years, with DOH giving itself the authority to determine which, if any, other elements of a local government comprehensive plan must be consistent with the water system plan. DOH is now working to develop a guidance document to further delineate what it believes "consistency" means. King County has been in discussions with DOH since the enactment of the MWL and does not agree with some aspects of the DOH interpretation of consistency with the King County Comprehensive Plan.

Under the GMA, local governments could limit the number, location, and allowed use of permit exempt wells to serve new development, especially within stream basins already closed to further withdrawals or in areas subject to contamination such as from saltwater intrusion, by not allowing their use as water supply for new development. While exempt well regulation is typically left to Ecology as part of their water resource management responsibilities, it is possible for the County to control exempt wells used to serve development, but not irrigation, based on land use and public health laws. To date King County has limited the use of exempt wells for subdivisions to not more than six lots on one exemption. The County imposed this limit to hold projected water demand to the 5,000 gpd limit for exempt wells. The County has also established a clear preference for water service to come first from existing Group A water systems, then from existing Group B systems and finally from individual exempt wells. The County's actions are limiting the rate of development of new exempt wells.

G. Low-impact Development

Land clearing and building activities can reduce groundwater recharge. Low-impact development (LID) that protects and enhances native vegetation and soils, reduces impervious surface areas, and manages stormwater at the source can protect and enhance groundwater recharge. These techniques are well-suited to development in rural-residential areas, and can be an effective way to protect groundwater quality and quantity on VMI.

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[63] Bob Powell, Vashon-Maury Island Growth Projections – Assessment of King County Data (2007) *available at* http://dogpatch.com/kcprop/ (last visited July 1, 2009).

Ecology's Phase II stormwater rules now applicable to King County have been modified under appeal before the Washington Pollution Control Hearing Board to require use of LID for new development when "feasible." As the "feasible" circumstances for implementation of LID becomes better defined it should help to protect the groundwater on VMI. As experience with LID increases, there will be increasing opportunity to retrofit existing drainage systems. Retrofit is the key to improving aquifer recharge quantity and quality for the areas of VMI that are already developed.

Landscape level storm water infiltration projects offer a broader strategy to improve aquifer recharge quantity and quality. VMI areas with high recharge potential have been identified through the King County Critical Aquifer Recharge Area delineation process and the Vashon Water Resources Study. Redirecting storm water runoff to the recharge areas and making provisions to infiltrate the water is a sustainable strategy to enhance water resources on VMI.

Conceptual designs and cost estimates for landscape-scale facilities to capture and infiltrate stormwater runoff would need to be developed. The potential benefit to the aquifer from broad-scale capture and infiltration of the stormwater runoff could then be modeled. Cost-effectiveness of the modeled aquifer recharge enhancements could be calculated based on their estimated potential to enhance stream flows and water supplies. Finally, the GWPC could develop recommendations for implementation of the preferred cost-effective aquifer recharge enhancement strategies.

Ensuring compatible land use designations for areas with high recharge potential provides another opportunity to enhance groundwater recharge. If warranted, the comprehensive plan and zoning could be revised to limit incompatible densities to sustain the quantities of aquifer recharge. Modifying the storm water drainage codes to require retention of storm water in high recharge areas could further help maintain aquifer recharge.

H. Rainwater Harvesting

Currently, Washington requires a water right to harvest rainwater. The state has allowed "de minimus" usage without requiring the user to obtain water rights; however, an exact amount considered "de minimus" has not been defined. Ecology is considering an administrative rule to exempt small amounts of rainwater harvest from the water rights process. In order to harvest enough rainwater to create a meaningful water supply alternative on VMI, a water right would be necessary. Rainwater harvesting typically consists of collecting runoff from a roof and storing the water for later potable or nonpotable use. While rainwater harvest is not generally considered to be cost-effective for water supply, compared to drilling an exempt well on VMI today, it is being used on other islands in Washington, such as the San Juan Islands. To date, Ecology has issued two general permits for rainwater harvesting, one to the City of Seattle and the other to San Juan County. A VMI rainwater harvest water right application would need to be designed to evaluate the four criteria required to be met under Washington state law before a water permit may be issued: beneficial use (not wasteful), water availablity; no impairment to existing rights; and not detrimental to the public interest (discussed above).

From a water cycle perspective, harvesting and using rainwater that would otherwise run off the Island as storm water would keep more water on the Island. This means that less water in the ground and streams would be withdrawn or diverted for consumption and could be retained to recharge the aquifer and maintain natural stream flows.

Using rainwater harvest as a supplemental water supply to flush toilets, especially on lots with on-site septic systems, would provide additional benefits. The used rainwater is returned directly to the ground via the septic system. This approach significantly improves the groundwater benefits of rainwater harvest by providing enhanced recharge in addition to reduced groundwater withdrawal. In addition, "grey water" from sinks and bathing facilities could also be captured to augment the rainwater harvested for toilet flushing.

I. Adjudication

Another tool to sustain water resources on VMI is to adjudicate the existing water rights. As noted in the earlier review of existing water rights, there are a few sizable historic water rights that may no longer be in use which if relinquished could reduce the "permitted" demand for water. Adjudication would allow a state court to determine who has a valid water right, how much water can be used, and who has priority to use the water during water shortages. A general adjudication under existing rules would be prohibitively costly and time-consuming so it is very unlikely this approach would be use on the Island. Ecology passed new legislation in 2009 to update and streamline the adjudication process. The new legislation may reduce the cost and time, making adjudication more practical in the future. In the interim, limited enforcement of the provisions relating to relinquishment for the inactive historic water rights could help clarify actual "permitted" water use on the Island.

VIII. Desired Outcomes

As the Committee develops long-term strategies to sustain the Island's water resources, they will need to effectively coordinate their actions through the multiple agencies with implementation authority. The Carr Report prepared in 1983 included a recommendation to have one lead agency coordinate all aspects of water resources of VMI. While creating one agency is unlikely to happen given the underlying state enabling legislation, greater coordination between agencies/program could help.

The GWPC membership charter includes representatives from some of the government agencies charged with responsibility for water resource management along with utilities and water user interest groups. Expanding the committee to include representation from all of the government agencies responsible for water resource management on VMI might provide better coordination. Giving the GWPC a more direct role in oversight of key water policy and regulatory decisions affecting VMI could move closer to the one lead agency for water resource management envisioned in the Carr Report.

Having multiple agencies speak with "One Government Voice" is not a new idea in Washington State.[64] Ecology and thirteen other state agencies have agreed on roles and

[64] Memorandum of Understanding for the Coordinated Implementation of Chapter 247, Laws of 1998: Watershed Management (Engrossed Substitute House Bill 2514), and Chapter 246, Laws of

responsibilities to coordinate the watershed planning process. Settlement of a recent federal court case in Washington State included establishment of a shared responsibility for management of groundwater resources between the state and tribe in a manner similar to the way Ecology manages a surface watershed under its Water Resource Inventory program.[65] The GWPC and WRE could be expanded into a "pilot coordination project" with the Committee composed of representatives from all water resource agencies and stakeholders charged with coordinating the water resource management actions by partner agencies to achieve long-term water resource sustainability on VMI.

Implementing the Committee's long-term strategies to sustain the Island's water resources may require additional financial resources. Two possible funding mechanisms currently available under state law include adopting a groundwater protection fee via the Board of Health or forming an Aquifer Protection Area. The Groundwater Protection Program conducted an extensive analysis of the county-wide groundwater protection needs and the available funding options in their 2005 report to the King County Council and Seattle King County Board of Health.[66]

Managing the water resources on VMI to ensure they are sustained long-term will be an ongoing challenge for Island residents and government agencies. Population growth and climate change will create new challenges to the protection of water quality and quantity. The new challenges will create new opportunities for creative solutions and coordinated management to sustain the VMI water resources. Existing programs and laws provide most of the tools necessary to meet the future water resource management challenges. The GWPCs working with stakeholders, King County, and state agencies, has already completed many important studies and actions to protect and manage VMI water resources. By continuing to work together in a coordinated and cooperative manner all of the stakeholders will ensure that water resources on VMI is sustained long-term.

1998: Salmon Recovery Planning (Engrossed Substitute House Bill 2496) By the Participating Agencies Of the State of Washington, *available at* http://www.ecy.wa.gov/watershed/misc/MOU.html.

[65] Jeff Kray, *Washington Enters First Tribal-State-Federal Water Rights Settlement*, Marten Law Grounp Environmental News, Jan. 23, 2008, http://www.martenlaw.com/news/?20080123-water-rights-settlement (last visited June 30, 2009).

[66] KING COUNTY DEPARTMENT OF NATURAL RESOURCES AND PARKS, GROUNDWATER PROTECTION SERVICES AND FUNDING: 2005 REPORT TO KING COUNTY COUNCIL AND SEATTLE-KING COUNTY BOARD OF HEALTH, *available at* http://www.kingcounty.gov/environment/waterandland/groundwater/maps-reports/2005-protection-report.aspx (last visited June 30, 2009).

Protecting the Source of Clean and Plentiful Water for One-Half of New Jersey's Population: The Highlands Water Protection and Planning Act[1]

Brian Weeks[2]

Water from the Highlands Region provides over half of the potable water supplied by public water systems in the entire state.[3] It is the source of potable water for 5.4 million of New Jersey's 8.5 million residents, including all the residents within the Region.[4] This water is, of course, critical to sustaining the social and economic viability of the entire state. Sprawl has threatened to cut off this water supply at its source.

The New Jersey legislature has decided to apply land use controls to preserve this irreplaceable water supply and other natural resources of the state's Highlands Region. This legislative model could be useful in other states where spreading land development threatens the long-term sustainability of water supplies.

I. The Highlands Region and the New Jersey Water Supply

The Highlands Region includes 1,343 square miles,[5] or about 800,000 acres,[6] covering approximately 13% of the land area of the state.[7] It crosses seven counties in the northwest

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[1] N.J. STAT. ANN. §§ 13:20-1-13:30-35. The Highlands Area is "an essential source of drinking water, providing clean and plentiful drinking water for one-half of the State's population." *Id.* § 13:20-2.

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[3] N.J. STAT. ANN. § 13:20-2; *see also* STATE OF NEW JERSEY HIGHLANDS WATER PROTECTION AND PLANNING COUNCIL, HIGHLANDS WATER RESOURCES VOLUME II: WATER USE AND AVAILABILITY TECHNICAL REPORT 98 (2008), *available at* http://www.highlands.state.nj.us/njhighlands/master/tr_water_res_vol_2.pdf (last visited May 28, 2009).

[4] *Id.*

[5] HIGHLANDS WATER PROTECTION AND PLANNING COUNCIL, HIGHLANDS REGIONAL MASTER PLAN 25 (2008) *available at* http://www.highlands.state.nj.us/njhighlands/master/rmp/final/highlands_rmp_112008.pdf (last visited May 28, 2009).

[6] N.J. STAT. ANN § 13:20-7(a).

[7] *Id.* § 13:20-2.

tier of New Jersey[8] and includes 88 municipalities.[9] The region has been settled for over 200 years, but 75% of it remains undeveloped land[10] and much of it (54%) is forested.[11] Almost 275,000 acres, comprising over 30% of the Region, are preserved as undeveloped land or farmland, under a variety of federal, state, municipal, nonprofit, or private ownership.[12] The Highlands mostly comprises the low hills and ridges of the easternmost range of the Appalachian Mountains, west of the geological piedmont province and east of the valley and ridge province.[13] Much of it lies along the Reading Prong geological formation.[14] It is part of the federally recognized Highlands Region,[15] an area of 3.5 million acres extending from southeastern Pennsylvania through northwest New Jersey, southeast New York, and northwest Connecticut.[16]

The Highlands Region is a headwaters area from which rivers flow in almost every direction. The Highlands Region generates more than 864 million gallons of water a day (mgd), which is used for drinking, industry, and agricultural uses.[17] Reservoirs in the Highlands provide over 600 mgd of potable water to public water supply systems in areas of northern and central New Jersey outside the Region.[18] During 2003, for example, reservoirs in the Highlands Region provided 115 billion gallons of drinking water to public water supply systems in New Jersey located outside the Highlands.[19] Potable water supplies used within the Highlands Region, primarily groundwater withdrawals, account for less than 20% of the total potable water use from the Region.[20] Agricultural uses within the Highlands Region account for less than 1% of the maximum monthly water use.[21]

The Highlands Region contains

> exceptional natural resources such as clean air, contiguous forest lands, wetlands, pristine watersheds, and habitat for fauna and flora, includes many sites of historic significance, and provides abundant recreational opportunities for the citizens of the State.[22]

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[8] Bergen, Passaic, Sussex, Morris, Warren, Hunterdon, and Somerset Counties. *Id.* § 13:20-7(a). New Jersey has a total of 21 counties.
[9] The region extends from Phillipsburg in the southwest to Mahwah in the northeast. *Id.*
[10] Highlands Regional Master Plan, *supra* note 5.
[11] *Id.* at 215.
[12] *Id.* at 72, 73.
[13] *Id.* at 1-2, 25.
[14] *Id.* at 25. The Reading Prong is a belt of ancient, hard crystalline rock extending across the Highlands Region. UNITED STATES GEOLOGICAL SURVEY, GEOLOGY OF THE NEW YORK CITY REGION, THE HIGHLANDS PROVINCE (2003), *available at* http://3dparks.wr.usgs.gov/nyc/highlands/highlands.html (last visited June 30, 2009).
[15] *See* Highlands Conservation Act of 2004, 108 Pub. L. No. 421, 118 Stat. 2375 (2004).
[16] Highlands Regional Master Plan, *supra* note 5, at 8, 9.
[17] Highlands Water Resources Volume II, *supra* note 3, at 98.
[18] *Id.*
[19] *Id.*
[20] *Id.*
[21] *Id.*
[22] N.J. STAT. ANN. § 13:20-2.

These natural resources are vital to the residents of the most densely populated state,[23] in the most densely populated area of the country.[24] The Region is suffused with an extensive network of water bodies: 3,605 miles of rivers and streams; 32,213 acres of mapped open waters (i.e., lakes, rivers and streams); and 90,091 acres of mapped wetlands. Over 40% of the Region is mapped riparian areas, which includes all open waters and the immediately adjacent lands. Approximately 110,000 acres are agricultural lands in active production, and the agricultural industry is a vital component of the regional economy.[25]

The Highlands was once a quiet rural area, distant from New Jersey's crowded cities. After World War II, population growth in New Jersey shifted to its suburbs, which expanded and covered the coastal and piedmont areas.[26] In the 1970s and 1980s, sprawl began to spread development into the Highlands.

Congress first initiated protection efforts for the Highlands Region through provisions in the Food, Agriculture, Conservation, and Trade Act of 1990.[27] That Act appropriated funds for the 1992 U.S. Forest Service study.[28] The 1992 study identified the Highlands as an area of national significance and identified various possible strategies, such as a regional transfer of development rights, to conserve its forest and water resources.[29] In October 2000, Congress passed Public Law 106-291, which in fiscal year 2001 appropriated $750,000 for the Forest Service's 2002 Update of the Highlands Regional Study.[30]

Governor James E. McGreevey created the Highlands Task Force on September 19, 2003.[31] The Task Force, whose findings served as the blueprint for the current legislation, issued a report in March 2004 setting forth its findings on the effects of development on the Region and recommending urgent action:

> The Highlands is under threat, though, from population growth, large-lot residential subdivisions, increased deforestation and fragmentation and sprawl. *Within the five-year period between 1995 and 2000, the Highlands lost – perhaps forever – 17,000 acres of forest and 8,000 acres of farmland. Growth pressures continue in the region with the trend for land consumption expected to average 3,000 acres every year.*

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[23] Highlands Regional Master Plan, *supra* note 5, at 215; N.J. STAT. ANN. § 52:18A-196(a). *See* also N.J. STAT. ANN. § 13:20-2 and http://en.wikipedia.org/wiki/List_of_U.S._states_by_population_density (last visited Mar. 31, 2009).

[24] "One in nine Americans lives within a 2-hour drive of the Highlands." U.S. DEPARTMENT OF AGRICULTURE, FOREST SERVICE, NORTHEASTERN AREA STATE AND PRIVATE FORESTRY, NEW YORK – NEW JERSEY HIGHLANDS REGIONAL STUDY: 2002 UPDATE, NA-TP-02-03 at 2 (Dec. 2002) *available at* http://na.fs.fed.us/pubs/stewardship/ny_nj_highlands02_lr.pdf (last visited May 28, 2009).

[25] N.J. STAT. ANN. § 13:20-2.

[26] *See* Highlands Regional Master Plan, *supra* note 5, at 4.

[27] Pub. Law. No. 101-624, 104 Stat. 3547 (1990).

[28] *Id.*

[29] 2002 USFS Study, *supra* note 24, at 138; *see id.* at 187, 190.

[30] Food, Agriculture, Conservation and Trade Act of 1990, Pub. Law. No. 101-624, § 1244(b), 104 Stat. 3547 (1990); 2002 USFS Study, *supra* note 24, at 4.

[31] State of New Jersey Executive Order No. 70 (2003), *available at* http://www.state.nj.us/infobank/circular/eom70.htm (last visited Mar. 14, 2009).

> Unless these trends are altered and an effective regional approach to the Highlands adopted, the harm to the region will be severe and permanent.[32]

By this time, sprawl had begun to devour the region and imperil its water supply. When it enacted the Highlands Act in 2004, the Legislature found that

> since 1984, 65,000 acres, or over 100 square miles, of the New Jersey Highlands have been lost to development; that sprawl and the pace of development in the region has dramatically increased, with the rate of loss of forested lands and wetlands more than doubling since 1995.[33]

The legislature also found that

> because of its proximity to rapidly expanding suburban areas, [the Highlands Region] is at serious risk of being fragmented and consumed by unplanned development; and that *the existing land use and environmental regulation system cannot protect the water and natural resources of the New Jersey Highlands against the environmental impacts of sprawl development.*[34]

Thus, the Legislature recognized an urgency to act quickly to protect and preserve the source of drinking water for over half the State's population. The Legislature also recognized that municipal land use controls were inadequate and that a comprehensive regional approach was needed.

II. The Highlands Act: Using Water Preservation to Guide Regional Land Use

The Highlands Water Protection and Planning Act (Highlands Act) was formally introduced in the Legislature as Senate Bill 1 on March 29, 2004.[35] The Act, signed into law by Governor McGreevey on August 10, 2004, regulates land use throughout the Highlands Region. The Act included a limited exemption for any "major Highlands development" that had obtained all necessary approvals and permits before the date the Act was introduced in the legislature.[36] For most purposes, the Act upon enactment became retroactively effective to March 29, 2004.

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[32] NEW JERSEY HIGHLANDS WATER PROTECTION AND PLANNING COUNCIL, 2004 ANNUAL REPORT at 3 (2004) (*quoting* Highlands Task Force Report, Executive Summary, March 2004), *available at* http://www.highlands.state.nj.us/njhighlands/news/publ/annual_report.pdf (last visited Apr. 15, 2009) (emphasis added).

[33] N.J. STAT. ANN. § 13:20-2.

[34] *Id.* § 13:20-2 (emphasis added).

[35] 2004 N.J. Sess. Law Serv. Ch. 120 (SENATE 1) (West). The Highlands Act is codified at several locations, primarily N.J. STAT. ANN. §§ 13:20-1 to 13:20-35, and included amendments to several other statutes. The full text of the Highlands Act is available at http://www.highlands.state.nj.us/njhighlands/actmaps/act/highlands_bill.pdf (last visited Mar. 14, 2009).

[36] N.J. STAT. ANN. § 13:20-28.

A. The Highlands Act: The Statute

The Highlands Act was adopted by the Legislature to protect the quality and quantity of essential drinking water at its source, ensuring a sustainable water supply for the long term.[37] The Legislature found and declared that

> protection of the New Jersey Highlands, *because of its vital link to the future of the State's drinking water supplies and other key natural resources*, is an issue of State level importance that cannot be left to the uncoordinated land use decisions of 88 municipalities, seven counties, and a myriad of private landowners; that the State should take action to *delineate within the New Jersey Highlands a preservation area of exceptional natural resource value that includes watershed protection and other environmentally sensitive lands where stringent protection policies should be implemented*;. . .[38]

The Legislature's findings included the determination that thousands of acres of land in the region were being lost annually to development and that it needed to act "as soon as possible."[39] The Highlands Act was based, in part, on the March 2004 Report of the Governor's Highlands Task Force.[40]

The Act requires regional, as well as local land use planning, focused on limiting sprawl across the area. The Legislature declared that

> it is appropriate to encourage in certain areas of the New Jersey Highlands, consistent with the State Development and Redevelopment Plan[41] and smart growth strategies and principles, appropriate patterns of compatible residential, commercial, and industrial development, redevelopment, and economic growth, in or adjacent to areas already utilized for such purposes, and *to discourage piecemeal, scattered, and inappropriate development*, in order to accommodate local and regional growth and economic development in an orderly way while protecting the Highlands environment from the individual and cumulative adverse impacts thereof. . .[42]

Nevertheless, individual municipalities continue to regulate local land use in the Highlands under their own zoning and planning ordinances.[43]

The Act divides the Highlands Region into two regulatory areas: "a preservation area, in which further development is strictly regulated, and a planning area, in which development

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[37] *Id.* § 13:20-2.
[38] *Id.* (emphasis added).
[39] *Id.*
[40] *See* Highlands Act, *supra* note 35, at §7(b) ("The preservation area shall consist of that area described by the Highlands Task Force, established by Executive Order No. 70 of 2003, and based upon natural resource data assembled by the United States Forest Service, Rutgers, The State University, and the New Jersey Water Supply Authority. . .").
[41] *See* N.J. STAT. ANN. § 52:18A-200.
[42] *Id.* § 13:20-2 (emphasis added).
[43] As per the Municipal Land Use Law, *id.* §§ 40:55D-1–40:55D-163.

consistent with the Act's goals is encouraged."[44] These areas are almost equal in size, with about 415,000 acres in the preservation area and 445,000 acres in the planning area.[45]

The Highlands Act delineates the boundaries of the two areas,[46] based upon regional and town centers designated by the State Planning Commission under the State Planning Act,[47] and extensive natural resource data.[48] That natural resource data was assembled by the U.S. Forest Service; Rutgers, The State University; and the New Jersey Water Supply Authority.[49]

Conceptually, the Act seeks to direct development away from the preservation area and toward the planning area. The Highlands Act builds upon existing statewide land and water use statutes. The Act does this by strictly regulating any "major Highlands development" within the preservation area.[50] The Act defines "major Highlands development" very broadly:

1) Any non-residential development in the preservation area;
2) Any residential development in the preservation area that requires *an environmental land use or water permit* or that results in the ultimate disturbance of one acre or more of land or a cumulative increase in impervious surface by one-quarter acre or more;
3) Any activity undertaken or engaged in the preservation area that is not a development but results in the ultimate disturbance of one-quarter acre or more of forested area or that results in a cumulative increase in impervious surface by one-quarter acre or more on a lot; or
4) Any capital or other project of a State entity or local government unit in the preservation area that requires *an environmental land use or water permit* or that results in the ultimate disturbance of one acre or more of land or a cumulative increase in impervious surface by one-quarter acre or more. Major Highlands development shall not mean an agricultural or horticultural development or agricultural or horticultural use in the preservation area.[51]

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[44] OFP, L.L.C. v. New Jersey, 395 N.J. Super. 571, 576-77 (App. Div. 2007), *aff'd*, 197 N.J. 418 (2008); *see* N.J. STAT. ANN. §§ 13:20-7(b), (c); 13:20-10(b), (c).
[45] Highlands Regional Master Plan, *supra* note 5, at 11-12; *see* N.J. STAT. ANN. §§ 13:20-7(b), (c).
[46] *Id.* § 13:20-7(d).
[47] *Id.* §§ 52:18A-196 - 52:18A-208.
[48] *See* Highlands Act, *supra* note 35, at §7(b) ("The preservation area shall consist of that area described by the Highlands Task Force, established by Executive Order No. 70 of 2003, and based upon natural resource data assembled by the United States Forest Service, Rutgers, The State University, and the New Jersey Water Supply Authority, which is to be translated, allowing for reasonable variations, by the Highlands Task Force with the assistance of Rutgers, The State University, the Department of Environmental Protection, and other appropriate entities, to appropriate and nearest practicable, on-the-ground, and easily identified reference points, such as, but not limited to, road descriptions, survey lines, and municipal boundaries, by May 1, 2004 or as soon thereafter as may be possible. This narrative description of the preservation area shall be enacted into law.").
[49] *Id.*
[50] N.J. STAT. ANN. § 13:20-30(a).
[51] *Id.* § 13:20-3 (emphasis added).

The Act defines "environmental land use or water permit" very broadly, to include the most significant of a broad range of statutes.[52]

The legislature intended for the Highlands Act to place immediate and specific limits on development activities in the Highlands Region. The sponsors' statement with the introduction of the initial bill made this intent abundantly clear and built it into the structure of the bill. The bill directed the Department of Environmental Protection (DEP) to:

> Develop and enforce two chronologically sequential environmental permitting programs and standards in the preservation area of the Highlands, [to govern] permits for major [Highlands] development.
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> The first DEP permitting program [took] effect [immediately] upon enactment of the bill, [consisting] of the regulatory requirements of existing environmental land use and water permits, as well as additional statutorily established standards in the bill that are self executing, which is to say that no rules and regulations would be required to implement them. . .
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> The second and permanent DEP permitting program for the preservation area, the Highlands permitting review program, would be adopted as immediately effective rules and regulations within nine months after enactment of the bill. . . These rules and regulations would establish a Highlands permitting review program, the structure and requirements for which would essentially track the requirements for the statutorily established Highlands Preservation Area approval.[53]

The Act contains detailed and stringent legislatively mandated environmental standards for the preservation area that went into effect immediately upon its enactment. Those standards include, for example:

- "[A] prohibition on major Highlands development within 300 feet of any Highlands open waters, and the establishment of a 300-foot buffer adjacent to all Highlands open waters. . .";[54]

- "[T]he quality of all Highlands open waters and waters of the Highlands within the preservation area [is] to be maintained, restored, or enhanced, . . . and any new or expanded point source discharge, except discharges from water supply facilities, shall not degrade existing water quality";[55]

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[52] "[A] permit, approval, or other authorization issued by the Department of Environmental Protection pursuant to the 'Freshwater Wetlands Protection Act,' [N.J. STAT. ANN. § 13:9B-1 *et seq.*], the 'Water Supply Management Act,' [N.J. STAT. ANN. § 58:1A-1 *et seq.*], the 'Water Pollution Control Act,' [N.J. STAT. ANN. § 58:10A-1 *et seq.*], 'The Realty Improvement Sewerage and Facilities Act (1954),' [N.J. STAT. ANN. § 58:11-23 *et seq.*], the 'Water Quality Planning Act,' [N.J. STAT. ANN. § 58:11A-1 *et seq.*], the 'Safe Drinking Water Act,' [N.J. STAT. ANN. § 58:12A-1 *et seq.*], or the 'Flood Hazard Area Control Act,' [N.J. STAT. ANN. § 58:16A-50 *et seq.*]." *Id.*

[53] New Jersey Senate Committee Statement, S.B. 1, § V (June 7, 2004).

[54] N.J. STAT. ANN. § 13:20-32(a).

[55] *Id.* § 13:20-32(b).

- "[A]ny diversion of more than 50,000 [gpd], and multiple diversions by the same or related entities for the same or related projects or developments of more than 50,000 [gpd], of waters of the Highlands shall require a permit . . . and any permit issued pursuant thereto shall be based on consideration of individual and cumulative impacts of multiple diversions, maintenance of stream base flows, minimization of depletive use, maintenance of existing water quality, and protection of ecological uses";[56]

- A zero net fill requirement for flood hazard areas.[57]

Certain activities are exempt from the Highlands Act, including the construction of a single-family home on an existing lot that disturbs less than one acre or increases impervious cover by less than one-quarter acre; a major Highlands development that received all necessary land use approvals before the Act's introduction on March 29, 2004; and the remediation of contaminated sites.[58] The Act also allows a waiver of strict compliance with the Highlands regulations when necessary to avoid a regulatory taking.[59] The Act provides for both civil and criminal penalties for violations.[60]

B. The DEP Highlands Preservation Area Rules

As directed by the Act,[61] the DEP has "establish[ed] a Highlands permitting review program to provide for the coordinated review of any major Highlands development in the preservation area."[62] That regulatory program[63] requires a Highlands Preservation Area Approval (HIPAA) for any major Highlands development in the preservation area.[64] The Highlands regulations incorporate from the Highlands Act the broad definition of "major Highlands development"[65] and the exemptions for agricultural or horticultural activities or development in the preservation area.[66] The New Jersey Department of Agriculture regulates agricultural and horticultural activities in the preservation area.[67] In addition to statewide New Jersey Department of Agriculture and State Soil Conservation Service rules, the Department of Agriculture regulates agricultural and horticultural uses and

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[56] *Id.* § 13:20-32(d).
[57] *Id.* § 13:20-32(f). This provision is pursuant to the Flood Hazard Area Control Act, N.J. STAT. ANN. §§ 58:16A-50 *et seq.*; 13:20-30(b)(1) to -(4).
[58] *Id.* § 13:20-28(a)(2), (3) and (15).
[59] The "narrative" criteria in § 36 of the Highlands Act which seek to reduce the adverse environmental effects of development may be waived to avoid a regulatory taking. *Id.* § 13:20-34(b).
[60] *Id.* § 13:20-35.
[61] *Id.* §§ 13:20-31,13:20-32.
[62] *Id.* § 13:20-33(a).
[63] Highlands Water Protection and Planning Act Rules, N.J. ADMIN. CODE tit. 7, ch. 38, adopted Nov. 1, 2006, effective Dec. 4, 2006. These DEP regulations do not apply in the planning area. N.J. STAT. ANN. §§13:20-30(d), 13:20-31(c).
[64] N.J. ADMIN. CODE. § 7:38-6.1 to -6.9.
[65] *Id.* § 7:38-1.4.
[66] N.J. STAT. ANN. §§ 13:20-29; 13:20-3 ("Major Highlands development shall not mean an agricultural or horticultural development or agricultural or horticultural use in the preservation area.").
[67] *See id.* § 13:20-29; *see also id.* § 4:1-21.5.

development in the Highlands under its "Agricultural Development in the Highlands" rules.[68]

The Highlands Water Protection and Planning Act Rules elaborate on the legislatively mandated environmental standards for the preservation area. The DEP is responsible for implementing the Highlands Act through the issuance or denial of HIPAAs and other permits required for any major Highlands development in the preservation area.[69] The primary goal of the Highlands regulations is to preserve "surface and ground water quality and supply" for human consumptive activities and ecosystem functioning.[70] The regulations seek to encourage development to proceed in areas that do not threaten the long-term viability of water resources and prioritize the preservation of undeveloped land in the preservation area. Nevertheless, the rules allow or even encourage development of certain types of land even within the preservation area, such as redevelopment of existing developed or brownfield (polluted) sites.

To obtain a HIPAA, the applicant must demonstrate that the proposed regulated activity will comply with the strictest DEP land use and water regulations of statewide applicability as well as with all DEP regulatory standards for the Highlands preservation area.[71] The DEP's regulatory standards for the preservation area govern water supply diversion sources,[72] public community water systems,[73] state-regulated stormwater and wastewater discharges,[74] impervious surfaces,[75] Highlands open waters,[76] flood hazard areas,[77] steep slopes,[78] upland forested areas,[79] historic and archeological areas,[80] rare, threatened or

[68] N.J. ADMIN. CODE § 2:92-1.1 to -5.1; Highlands Regional Master Plan, *supra* note 5, at 11-12. These rules require, for example, preparation of a Farm Conservation Plan or a Resource Management System Plan if agricultural or horticultural development results in an increase in impervious cover of, respectively, greater than three or nine percent. N.J. ADMIN. CODE § 2:92-3.1, -4.1.

[69] N.J. STAT. ANN. § 13:20-30.

[70] N.J. ADMIN. CODE § 7:38-1.1(i)1.

[71] *Id.* § 7:38-6.1.

[72] *Id.* § 7:38-3.2.

[73] *Id.* § 7:38-3.3.

[74] *Id.* § 7:38-3.4. Under 33 U.S.C. §§ 1344-1387, the U.S. Environmental Protection Agency, the U.S. Fish and Wildlife Service, and the Army Corps of Engineers have authorized the State of New Jersey to regulate waters within the state. 47 Fed. Reg. 17,331 (Apr. 22, 1982). The state regulates its waters through the New Jersey Pollution Discharge Elimination System (NJPDES). *See* N.J. ADMIN. CODE tit. 7, ch. 14A. The NJPDES regulations must be at least as stringent as, but may be more stringent than, the federal regulatory programs. *See* In re Freshwater Wetlands Protection Act Rules, 238 N.J. Super. 516, 520 (App. Div. 1989). The New Jersey courts recently rejected a challenge to the Highlands Water Protection and Planning Act Rules which alleged that DEP regulation of Highlands waters is impermissibly strict. In re Highlands Water Protection and Planning Act Rules, Docket No. A-3-34-06T1, slip op. (N.J. Super. Ct. App. Div. April 24, 2009).

[75] N.J. ADMIN. CODE § 7:38-3.5.

[76] *Id.* § 7:38-3.6.

[77] *Id.* § 7:38-3.7.

[78] *Id.* § 7:38-3.8.

[79] *Id.* § 7:38-3.9.

[80] *Id.* §. 7:38-3.10.

endangered plant and animal species,[81] and unique or irreplaceable land types and existing public scenic attributes.[82]

Those standards are strict. The preservation area open waters rule,[83] for example, establishes a 300-foot buffer zone within which there may be no site disturbance. The development also must cause no more than *de minimis* harm to water quality or other natural resources.[84] If DEP grants the HIPAA, the owner must record on the undeveloped portion of the parcel a binding conservation restriction preserving the balance of the site in its natural state.[85]

If the proposed development requires construction of a water supply system, it must comply with the Safe Drinking Water Act rules.[86] Development that requires a New Jersey Pollutant Discharge Elimination System (NJPDES) permit or treatment works approval to discharge to Highlands open waters must comply with the antidegradation provisions of the Surface Water Quality Standards[87] and the Stormwater Management rules[88] applicable to the highest quality "Category One" waters. Pursuant to N.J. Stat. Ann. §13:20-6n, the DEP may not issue a HIPAA for any regulated activity in an area identified in the Highlands Regional Master Plan (see Section II.C below) as a special area. Development is prohibited within special areas to protect water resources and environmentally sensitive lands.[89]

C. The Highlands Council, Regional Master Plan, and Land Capability Maps

Through the Act, the Legislature established a new state agency, the Highlands Water Protection and Planning Council, comprised of state and local officials to implement the statute.[90] The Council is an independent agency with fifteen members, appointed by the Governor.[91] The Act charges the Highlands Council with adopting a regional master plan to guide land use planning in the Highlands Region.[92] The Council finalized the Highlands Regional Master Plan in July 2008.[93]

To prepare the Regional Master Plan, the Highlands Council studied all the natural resources governed by those rules: water supply diversion sources, public community water systems, NJPDES permitted discharges and wastewater facilities, impervious surfaces, Highlands open waters, flood hazard areas, steep slopes, upland forested areas, historic and

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[81] *Id.* § 7:38-3.11.
[82] *Id.* § 7:38-3.12.
[83] *Id.* § 7:38-3.6.
[84] *Id.* § 7:38-6.2.
[85] *Id.* § 7:38-6.3.
[86] *See id.* § 7:10.
[87] *See id.* § 7:9B.
[88] *See id.* § 7:8.
[89] *Id.* § 7:38-6.1. Within the Highlands preservation area, even development with an adequate water supply must comply with the stringent DEP environmental standards discussed above. *See id.* § 7:38-3.
[90] N.J. STAT. ANN. §§ 13:20-4, 13:20-5.
[91] The powers delegated to the Council are listed in N.J. STAT. ANN. § 13:20-6.
[92] *Id.* § 13:20-6, -8.
[93] *See* Highlands Regional Master Plan, supra note 5.

archeological areas, rare, threatened or endangered and animal species, and unique or irreplaceable land types and existing public scenic attributes.[94]

For the entire Region, the purpose of the Master Plan is to establish standards to "protect and enhance the significant values" of the abundant and critical resources of the Highlands Region.[95]

The goals of the Regional Master Plan with respect to the Preservation Area are to:

1) Protect, restore, and enhance the quality and quantity of surface and ground waters therein;
2) Preserve extensive and, to the maximum extent possible, contiguous areas of land in its natural state, thereby ensuring the continuation of a Highlands environment which contains the unique and significant natural, scenic, and other resources representative of the Highlands Region;
3) Protect the natural, scenic, and other resources of the Highlands Region, including but not limited to contiguous forests, wetlands, vegetated stream corridors, steep slopes, and critical habitat for fauna and flora;
4) Preserve farmland and historic sites and other historic resources;
5) Preserve outdoor recreation opportunities, including hunting and fishing, on publicly owned land;
6) Promote conservation of water resources;
7) Promote brownfield remediation and redevelopment;
8) Promote compatible agricultural, horticultural, recreational, and cultural uses and opportunities within the framework of protecting the Highlands environment; and
9) Prohibit or limit to the maximum extent possible construction or development which is incompatible with preservation of this unique area.[96]

The goals of the Regional Master Plan with respect to the Planning Area are to:

1) Protect, restore, and enhance the quality and quantity of surface and ground waters therein;
2) Preserve to the maximum extent possible any environmentally sensitive lands and other lands needed for recreation and conservation purposes;
3) Protect and maintain the essential character of the Highlands environment;
4) Preserve farmland and historic sites and other historic resources;
5) Promote the continuation and expansion of agricultural, horticultural, recreational, and cultural uses and opportunities;
6) Preserve outdoor recreation opportunities, including hunting and fishing, on publicly owned land;
7) Promote conservation of water resources;
8) Promote brownfield remediation and redevelopment;
9) Encourage, consistent with the State Development and Redevelopment Plan and smart growth strategies and principles, appropriate patterns of compatible

[94] *See* N.J. ADMIN. CODE §§ 7:38-3.2 to 7:38-3.11.
[95] N.J. STAT. ANN. § 13:20-10; Highlands Regional Master Plan, *supra* note 5, at 12.
[96] N.J. STAT. ANN. § 13:20-10(b).

residential, commercial, and industrial development, redevelopment, and economic growth, in or adjacent to areas already utilized for such purposes, and discourage piecemeal, scattered, and inappropriate development, in order to accommodate local and regional growth and economic development in an orderly way while protecting the Highlands environment from the individual and cumulative adverse impacts thereof; and

10) Promote a sound, balanced transportation system that is consistent with smart growth strategies and principles and which preserves mobility in the Highlands Region.[97]

The legislature directed the Highlands Council to conduct a resource assessment that would serve as the foundation for a Regional Master Plan.[98] The Regional Master Plan is to "determine the amount and type of human development and activity which the ecosystem of the Highlands Region can sustain."[99]

In response, the Council analyzed the natural resources of the Region and identified areas of greater ecological importance with the primary goal of preserving water resources. The Master Plan seeks to preserve water supply and quality by intergovernmental planning and coordination for the location and methods for development that can allow sustainable water resources. The Council conducted thorough technical studies of the ecological values of land throughout the Highlands. The Council conducted most of these analyses in collaboration with the U.S. Geological Survey (USGS). Development of the Regional Master Plan also included extensive consultations with State agencies, municipalities located within the Region, and various interest groups, as required by the Highlands Act.[100]

Those studies focused especially on identifying areas with the highest priority for preserving water resources. Those include land around and near reservoirs, lakes, streams, and aquifer recharge areas. The studies evaluated the ecological importance of specific lands within each watershed and sub-watershed.

The Highlands Council organized that data into maps showing the relative availability of and burdens upon the natural resources of the Region. The Council created a Land Use Capability Map Series.[101] The Council developed detailed underlying topographic maps from aerial overflight studies using LIDAR (Light Detection and Ranging) technology. It then superimposed a variety of resource-oriented data layers to produce an interactive database capable of generating maps with the desired set of information.

These maps are very detailed. The Highlands Council studied all 183 sub-watersheds in the Highlands Region using the Hydrological Unit Code 14 (HUC-14) model.[102] The more digits

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[97] *Id.* § 13:20-10(c).
[98] *See id.* §§ 13:20-8, 13:20-6.
[99] Highlands Regional Master Plan, *supra* note 5, at 12.
[100] N.J. STAT. ANN. § 13:20-9.
[101] *Id.* § 13:20-1(a)(6)(a).
[102] N.J. ADMIN. CODE § 7:38-1.4. The boundaries of HUC 14 subwatersheds in New Jersey are available from the N.J. Department of Environmental Protection's Geographic Information Systems (GIS) downloads web page, http://www.nj.gov/dep/gis/download.htm (last visited June 30, 2009).

in the sub-watershed unit code, the smaller the area; since HUC-14 uses 14 digits, it surveys quite small areas.[103]

Using those maps, the Council developed a scheme to regulate land uses in the Region to preserve the highest-priority natural resources and to direct development to less environmentally sensitive areas. It divides the Region into three zones and four sub-zones. The three zones are the protection, conservation, and existing community zones. The four sub-zones are: (1) the conservation zone - environmentally constrained sub-zone; (2) the existing community zone - environmentally constrained sub-zone; (3) the lake community sub-zone and (4) the wildlife management sub-zone.

The protection zone consists of high resource value lands. Land acquisition is a priority in the protection zone and development activities are extremely limited by statute and regulation. The conservation zone consists of areas with significant agricultural lands interspersed with associated woodlands and environmental features. The existing community zone consists of areas with regionally significant concentrated development signifying existing communities.[104]

The conservation zone, an environmentally constrained sub-zone, consists of agricultural lands with some environmental constraint, such as a limited water supply, steep slopes, or forest adjacent to critical habitat. The existing community zone is an environmentally constrained sub-zone that consists of already developed land, and is therefore appropriate for development or redevelopment, but faces some environmental constraint.

The lake community sub-zone contains already existing development but poses special risks to water quality. These communities are located near a lake shore and often rely on aging, overtaxed, or poorly maintained infrastructure, frequently involving septic and drainage systems.

The wildlife management sub-zone involves wildlife habitat areas. While the Highlands contains several large areas of contiguous undeveloped land, wildlife habitat in the Region faces a number of threats. Many wildlife management properties are owned by private conservation groups or municipalities and are often small. Others are privately owned lands that serendipitously remain undeveloped since no other environmental law protects them. In addition to the threat from further sprawl, habitat areas are often fragmented.

As directed by the Act, the Preservation Area includes "special environmental zones," identified by resource assessments as having very high ecological value.[105] The Legislature directed that, in those areas, "development shall not occur in order to protect water resources and environmentally sensitive lands."[106] Since enactment of the Act, the Highlands Council has worked to identify those special areas and develop strategies to preserve them. These special environmental zones amount to a total of about 19,000 acres of the approximately 800,000 acres (approximately 2.5%) of the entire Highlands area.[107]

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[103] Highlands Water Resources Volume II, *supra* note 3, at 1.
[104] Highlands Regional Master Plan, *supra* note 5, at 177-78.
[105] N.J. STAT. ANN. §§ 13:20-6(n), 13:20-12(a).
[106] *Id.* Opponents of the Highlands scheme refer to these as "no-build" areas.
[107] *See* Highlands Regional Master Plan, *supra* note 5, at 230.

Within the preservation area, strict DEP permitting requirements apply and municipalities must conform their master plans and ordinances for development with the Highlands Regional Master Plan. In the planning area, municipal ordinance conformance with the Highlands Regional Master Plan is voluntary.[108] The Highlands Council works with municipalities to adopt land use ordinances that encourage development to use best management practices to protect water resources.

The planning area, on the other hand, is exempt from a number of other environmental restrictions that apply in the preservation area. These include, most importantly, the DEP Highlands permitting review program and its regulations, which apply only in the preservation area.[109]

The Highlands Council approved the Highlands Regional Master Plan on July 17, 2008.[110] Governor Jon Corzine ratified the Master Plan by Executive Order on September 5, 2008.[111] That Executive Order also directed the New Jersey DEP to restrict permits for new development that drains water from undeveloped regions in the Highlands Planning Area where water is deficient and directed the Highlands Council to make all future planning decisions in an open and transparent process, open to public comment.

In general, the Regional Master Plan and the Highlands regulations seek to preserve the flow of water into existing reservoirs by limiting upstream use of groundwater and surface water. Under the New Jersey Water Supply Authority Act,[112] the State Bureau of Water Allocation regulations govern the allocation of water from the reservoirs within the Highlands Region.[113] Those regulations are more stringent in the Highlands area, though. Statewide, the Bureau of Water Allocation normally requires a water allocation permit to withdraw more than 100,000 gpd of groundwater or surface water.[114] In the Highlands preservation area, though, a water allocation permit is normally required to withdraw in excess of 50,000 gpd.[115] Nevertheless, the Water Supply Authority must consult with the Highlands Council before taking any final action on any of its projects.[116] The DEP

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[108] *See* N.J. STAT. ANN. §13:20-11(b); N.J. ADMIN. CODE § 7:38-3.1.

[109] "The requirements and provisions of [N.J. STAT. ANN. §§ 13:20-31 through 13:20-35, 13:9B-5.1, 58:1A-5.1, 58:11-24.1, 58:12A-4.1, 58:11A-7.1, 58:16A-60.1] shall not apply in the planning area." N.J. STAT. ANN. § 13:20-31(c).

[110] The final version of the Highlands Regional Master Plan is available at http://www.highlands.state.nj.us/njhighlands/master/rmp/final/highlands_rmp_112008.pdf (last visited Mar. 17, 2009).

[111] Governor Corzine ratified the Master Plan by approving the minutes of the Council's July 17 meeting by issuing Executive Order No. 114 on Sept. 5, 2008. Press Release, New Jersey Governor's Office, *Governor Corzine Approves Highlands Master Plan, Issues Executive Order To Strengthen Implementation*, (Sept. 5, 2008), http://www.state.nj.us/governor/news/news/2008/approved/20080905a.html (last visited June 30, 2009).

[112] N.J. STAT. ANN. §§ 58:1B-1 to 58:1B-25.

[113] N.J. ADMIN. CODE § 7:11.

[114] *See* N.J. STAT. ANN. § 58:1A-6.

[115] *Id.* § 13:20-30(b)(3); Highlands Regional Master Plan, *supra* note 5, at 87.

[116] N.J. STAT. ANN. § 58:1B-6(d).

regulates stormwater management,[117] under several statewide statutes,[118] for all but the smallest development activity.

Preservation of groundwater involves determining its quantity, flow, and recharge, and limiting the consumption of existing supplies and preserving the recharge capacity by controlling expansion of impervious cover. The Council determines groundwater availability by using stream flow data.[119] The Highlands Council has assembled its data on the quality and quantity of water in the Highlands in a two-volume report, available on its web site.[120]

One of the most critical analyses for the hydrological cycle involved identifying Prime Ground Water Recharge Areas.[121]

> Prime Ground Water Recharge Areas have been mapped for each subwatershed of the Highlands Region, identifying the land areas with the best recharge rates and that, in aggregate, yield 40% of the total recharge volume for that subwatershed during drought periods, when water recharge is most critical.[122]

The Council and USGS analyzed the amount of water originating within the Region used per year and the amount already allocated by a state permit but not yet used. They found that

> Within the Highlands Region, there are 144 water allocation permits covering withdrawals from 581 wells and surface water intakes.
>
> The Highlands Region generates almost 870 mgd to meet the needs of potable drinking water, industry, and agriculture. The Region also includes the State's major reservoir systems providing in excess of 600 mgd of drinking water to the urban areas of northern and central New Jersey. Estimates of future water use projected to full allocation suggest that existing commitments of Highlands waters may be as high as 2.8 billion gallons of water daily, not including domestic use.[123]

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[117] N.J. ADMIN. CODE §§ 7:8-1.1, 7:8-1.2 ("'Development' means the division of a parcel of land into two or more parcels").

[118] The Water Quality Planning Act, N.J. STAT. ANN. § 58:11A-1 *et seq.*: the Water Pollution Control Act, N.J. STAT. ANN. § 58:10A-1 *et seq.*; the Flood Hazard Area Control Act, N.J. STAT. ANN. § 58:16A-50 *et seq.*; the Coastal Area Facility Review Act, N.J. STAT. ANN. § 13:19-1 *et seq.*; the Wetlands Act of 1970, N.J. STAT. ANN. § 13:9A-1 *et seq.*; the Waterfront Development Law, N.J. STAT. ANN. § 12:5-3; the Freshwater Wetlands Protection Act, N.J. STAT. ANN. § 13:9B-1 *et seq.*; and the Dam Safety Act, N.J. STAT. ANN. § 58:4-1 *et seq.*

[119] Highlands Regional Master Plan, *supra* note 5, at 159.

[120] The data most relevant to water quantity is in the report "Highlands Water Resources Volume II". Volume I mainly contains data on water quality. For other technical documents on the natural resources of the Highlands, *see* New Jersey Highlands Council, Chronology of Public Release Documents, http://www.highlands.state.nj.us/njhighlands/master/chronological.html (last visited June 30, 2009).

[121] Highlands Regional Master Plan, *supra* note 5, at 80.

[122] Highlands Water Resources Volume II, *supra* note 3, at 2.

[123] *Id.* at 2.

Reservoirs in the Highlands have a capacity of well over 500 mgd, "enough supply to provide water for over five million people during a repeat of the 1960's drought of record."[124] Most of this water is used by heavily developed urban and suburban areas in northern and central New Jersey.

The analysis included identifying areas that have a water deficit, i.e., where current consumptive uses exceed the sustainable recharge capacity of the sub-watershed during a low flow (dry weather) period, and those areas that have a surplus of available water, i.e., water is available for additional human consumptive uses. Of the 183 sub-watersheds in the Highlands, 114 are considered Current Deficit Areas.[125]

The studies included analyzing the ecological effects of depleting Highlands resources. These include a pilot study by the USGS of the biological effects of low flow in Highlands streams, using the low flow margin method, and a Forest Integrity Analysis by Rutgers University. The latter study analyzed the sustainability of the waters in the Highlands Region by first determining the amount of water in the Region, then deciding the amount required to protect the aquatic ecology, and then calculating the amount available for consumptive or depletive uses. The analysis used stream flow as a surrogate for water sustainability to ensure healthy aquatic ecosystems and potable water supplies even during a drought of the magnitude of the 1960s drought of record.[126]

Wastewater disposal capacity, like potable water supply, limits the extent of development an area can sustain over the long term. The Master Plan includes a study of the groundwater nitrogen levels from septic disposal systems and sets standards for the preservation area and for already developed areas.[127]

Another essential technical analysis by the Council calculated the amount and location of land that could be developed sustainably, i.e., without adversely affecting the long-term water supply potential and other ecological resources of the Highlands.[128]

> A central goal of the Regional Master Plan is to determine the amount and type of human development and activity that the ecosystem of the Highlands Region can sustain while still maintaining the overall ecological values thereof, with special reference to surface and ground water quality and supply.[129]

The Regional Master Plan contains that "Smart Growth Analysis," which identifies appropriate areas where discretionary growth may be directed. The Council based its Smart Growth Analysis on the Land Use Capability map series to determine the level of density that is sustainable in each community.[130] The Council identified and analyzed developed areas based on current land uses, development activities, population density, and impervious surfaces, to reduce the adverse effects of development on more sensitive

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[124] *Id.* at 3-4; *see id.* at 2, 98.
[125] *Id.* at 3.
[126] Highlands Regional Master Plan, *supra* note 5, at 78.
[127] *See*, *e.g.*, *id.* at 278 (Routine maintenance of residential septic systems).
[128] *Id.* at 126 (Sustainable Economic Development).
[129] Highlands Water Resources Volume II, *supra* note 3, at 2.
[130] *See* Regional Master Plan, *supra* note 5, at 303-12.

undeveloped areas. These areas include brownfield and "greyfield" (paved) sites where redevelopment will pose little environmental risk and if implemented using sustainable practices could improve the environment.[131] The Council also has identified areas, even within the preservation area, that are appropriate for development and redevelopment. Most of these, too, are brownfield or greyfield sites that the Regional Master Plan considers "appropriate for redevelopment."[132] For example, the Land Use Capability maps identify over 11,000 acres in the planning area with some degree of existing development where five or fewer units per acre could be met through increased density and infill, and only about 980 acres of undeveloped land where this goal could be met through new development.

The Council and the DEP use this mapped natural resource data to regulate land uses in the Region, with the goals of preserving the highest-priority natural resources and directing development to less environmentally sensitive areas. In addition to DEP's regulation through its statewide and Highlands rules, the Highlands Council works with municipalities in the Region to conform their local land use ordinances to the Master Plan and Highlands regulations.[133] Each municipality in the preservation area must submit its municipal master plan and land use ordinances to the Council for conformance with the Regional Master Plan.[134] Municipalities in the planning area may petition the Council to review their municipal master plan and land use ordinances for conformance with the Regional Master Plan.[135] The goal is to preserve the areas with the highest priority natural resources, especially water, based on the Regional Master Plan.

The State has offered several incentives to Highlands municipalities to undertake the Master Plan conformance process. For example, the Council has funding available for municipalities to undertake the conformance process. These include enhanced planning grants of up to $250,000.[136]

As another example, under its Third Round Rules, the State Council on Affordable Housing (COAH) grants each entity commencing the conformance process a one-year extension on the December 31, 2008 deadline to submit their affordable housing plan.[137] The municipalities who submitted that notice of commencing the process now have until December 8, 2009 to submit their plan. In addition, COAH must take the Regional Master Plan into account when calculating the allocation of regional fair share housing to municipalities in the Highlands.[138]

The Highlands Act directed the COAH[139] to

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[131] *See id.* at 195. An example of such an improvement might include an abandoned lot with contaminated soil which would be covered by redevelopment. The new structures and pavement would cover the contamination and prevent its spread.
[132] *See id.*
[133] N.J. STAT. ANN. § 13:20-14, -15; *see id.* § 13:20-4.
[134] *Id.* § 13:20-14.
[135] *Id.* § 13:20-15.
[136] *Id.* § 13:20-13(k).
[137] *See* N.J. ADMIN. CODE § 5:97. The Substantive Rules of the New Jersey Council on Affordable Housing for the Period Beginning June 2, 2008. *See id.* § 5:97-1.1.
[138] N.J. STAT. ANN. § 13:20-23.
[139] The COAH was created under the Fair Housing Act, *id.* § 52:27D-301 *et seq.*

> take into consideration the regional master plan prior to making any determination regarding the allocation of the prospective fair share of the housing need in any municipality in the Highlands Region . . . for the fair share period subsequent to 1999.[140]

When ratifying the Master Plan, Governor Corzine directed the COAH to work with the Highlands Council to ensure that not even affordable housing needs will impede protection of the Highlands water supply.[141]

As of spring 2009, the Council is reviewing the land use ordinances of most of the 88 municipalities in the Region who notified the Council of their intent to conform their land use ordinances with the Master Plan.

III. Landowner Compensation under the Highlands Act

In its adoption of the Highlands Act, the Legislature recognized and addressed both landowners' claims for equity and smart growth principles. To affect that balance, the Legislature established several administrative processes that can mitigate the financial effect of development restrictions upon owners of properties identified for preservation based on their high natural resource values. The long-term viability of the Highlands Act, or indeed any ambitious land use regulatory program, largely depends upon adequate provisions to avoid unconstitutional takings of private property without just compensation.[142]

The Highlands Act "recognize[es] the need to provide just compensation to the owners of those lands when appropriate, whether through acquisition, transfer of development rights programs, or other means or strategies."[143] Those processes include the transfer of development rights,[144] fair voluntary acquisition,[145] exemptions,[146] and approvals and waivers for hardship that would affect an unconstitutional taking of property.[147] All these processes require an administrative determination of whether and how the Highlands Act will affect use of a particular property.

In addition to these administrative processes, the Highlands Act requires that the state allocate funds to purchase and preserve additional lands and to develop other methods to compensate landowners and municipalities for lost development opportunities. Among the

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[140] *Id.* § 13:20-23.
[141] State of New Jersey Executive Order No. 114 (Sept. 5, 2008), *available at* http://www.state.nj.us/governor/news/news/2008/approved/20080905a.html (last visited June 30, 2009).
[142] *See* Palazzolo v. Rhode Island, 533 U.S. 606, 617 (2001); Lucas v. South Carolina Coastal Council, 505 U.S. 1003, 1015 (1992); Penn Central Transp. Co. v. New York City, 438 U.S. 104, 124 (1978).
[143] N.J. STAT. ANN. § 13:20-6(n).
[144] *Id.* § 13:20-13.
[145] *Id.* § 13:20-11(a)(2)(a).
[146] *Id.* § 13:20-28.
[147] Even in the special preservation areas identified under N.J. STAT. ANN. §§ 13:20-6(n) and 13:20-12(a), though, owners may qualify for an exemption from the regulations. Such an exemption may be granted to avoid a financial hardship. *Id.* § 13:20-33(b)(3).

sources are a portion of statewide realty transfer fees, dedicated to the Highlands and Pinelands,[148] and deposited in the new Highlands Protection Fund.[149] The legislature directed deposits into the fund of $12,000,000 in each of the first ten years after enactment of the Highlands Act and $5,000,000 in each year thereafter.[150] These funds are a portion of the State's share of fees collected by county recording officers. These measures serve as incentives to channel growth away from areas that are more environmentally sensitive and into more environmentally appropriate areas.

A. Transfer of Development Rights

The New Jersey Appellate Division explains the functioning of a transfer of development rights (TDR) program as follows:

> A TDR program is a land use tool that permits a public agency to use market forces to encourage the transfer of development potential from areas the agency wants to preserve (sending zones) to areas that are more appropriate for growth (receiving zones). Landowners in sending zones may obtain compensation in the form of TDR credits for restricting development on their properties. Payment for this lost development potential comes from purchasers who buy TDR credits, which then entitle the purchasers to build in a receiving zone at a greater density than permitted by the underlying zoning.[151]

As directed by the legislature, the Highlands Council established a regional TDR program consistent with the New Jersey Transfer of Development Rights Act.[152] The Highlands TDR program permits the transfer of Highlands Development Credits (HDCs), to further the goals of the Highlands Act. A community may use HDCs to facilitate market forces to encourage the transfer of development potential from higher resource value lands that the community wants to preserve to lands that are more appropriate to accommodate increased growth. Landowners in the Sending Zones receive HDCs as compensation for restricting development on their property. Under the Highlands Act, since Receiving Zones are voluntary, the municipality decides whether it wants denser development.[153]

TDR credits are available to landowners in the "sending" zones as an inducement and compensation for preserving rather than developing their property. Because TDRs provide compensation to landowners, unconstitutional regulatory taking claims can be avoided when the application of the Master Plan results in the denial of a development proposal.

In accordance with the Highlands Act and the Master Plan, the Highlands Council established a Highlands TDR bank "for the purposes of facilitating the transfer of

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[148] The Pinelands Area is another special area in southern New Jersey protected under the Pinelands Protection Act, N.J. STAT. ANN. §§ 13:18A-1 to -29, and its regulations, the Pinelands Comprehensive Management Plan, N.J. ADMIN. CODE § 7:50. The Pinelands sits atop a large aquifer of potable groundwater.

[149] N.J. STAT. ANN. §§ 13:20-19, 46:15-8.

[150] *Id.* § 46:15-8.

[151] OFP, 395 N.J. Super. at 588-89.

[152] N.J. STAT. ANN. §§ 40:55D-137 to -163; 13:20-13.

[153] *Id.* § 13:20-13(c).

development potential."[154] The Highlands TDR bank must operate consistent with the New Jersey Transfer of Development Rights Bank Act.[155] The TDR bank has a nine-member board of directors that includes representatives of several interest groups. These include the State Agriculture Development Committee (SADC), the state's undeveloped land preservation program (Garden State Preservation Trust), the Water Supply Authority, a farmer, a banker, and a business owner.[156]

At the request of Governor Corzine, the legislature appropriated $10 million for the initial capitalization of the Highlands TDR bank. (The Highlands Council had recommended $50 million.) The Governor indicated his intention that the TDR Bank begin the process of purchasing development credits from those who want to remain on farmland in the Highlands. The Highlands Act also established a Highlands Protection Fund, dedicated to provide property tax relief, capitalize the TDR program, provide planning assistance, and acquire watershed lands for preservation.[157]

A variety of funding sources are available to acquire property for preservation in the Highlands. Funding to acquire lands for public open space is available through the Garden State Preservation Trust Act,[158] as periodically funded by the Legislature,[159] as well as municipal and county open space acquisition funds.[160] The long-term viability of land preservation efforts, through the acquisition of development rights or fee interests or other methods, largely depends upon creating a continuous source of funding. At least one legislative proposal would provide additional funding to acquire watershed lands in the Highlands preservation area by imposing a tax on potable water withdrawn from the Highlands area.[161]

The Highlands Council's planning activities include identifying environmental and farmland preservation priorities within the Preservation Area, and designating critical areas within the Planning Area, for preservation or acquisition using HDCs or through purchase.

The Highlands TDR program also includes other incentives for municipalities to participate. Incentives for participating municipalities include increased density, facilitated

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[154] *Id.* § 13:20-13(i)(1).
[155] *Id.* §. 4:1C-51.
[156] Press Release, New Jersey Governor's Office, *HDC Bank Takes First Steps: Bank will oversee Highlands Transfer of Development Rights Program* (Feb. 2, 2009), available at http://www.highlands.state.nj.us/njhighlands/hdcbank/hdc_bank_020209.pdf (last visited June 30, 2009); *see Highlands TDR Program*, powerpoint presentation from HDC Bank Board Meeting, Apr. 2, 2009, *available at* http://www.highlands.state.nj.us/njhighlands/hdcbank/tdr_program_040209.pdf (last visited June 30, 2009).
[157] N.J. STAT. ANN. § 13:20-19.
[158] *Id.* §§ 13:8C-1 to -42.
[159] See, *e.g.*, New Jersey Green Acres Land Acquisition and Recreation Opportunities Act, *id.* §§ 13:8A-35 to -55.
[160] As per Executive Order No. 114, *supra* note 141.
[161] *See* S. 1454 and A. 3874, which would impose water consumption and diversion user fee of $.40 per thousand gallons of water delivered to a consumer to fund open space and farmland preservation projects (S. 1454 introduced March 6, 2008 and A. 3874 introduced May 7, 2009), *available at* http://www.njleg.state.nj.us (last visited May 29, 2009).

regulatory approval of development consistent with the Master Plan, and preference for State infrastructure funding.[162]

The TDR process is new, and the Highlands Council anticipates it will take about seven years before it is fully underway. The Highlands TDR process is similar to the Pinelands Development Credits (PDCs) in the Pinelands. There, even with mandatory sending and receiving zones, the PDC process required over twelve years to get fully underway.

IV. Constitutionality of Highlands Act Upheld: *OFP v. New Jersey*

The New Jersey courts have upheld the Highlands Act against a claim that it serves as an unconstitutional regulatory taking. OFP, L.L.C., the owner of a 93-acre parcel of undeveloped property in the preservation area, alleged that the statute, as applied to its property, effected an unconstitutional taking of property without just compensation. The courts found that the statute contained a number of options for a property owner to productively use property in the Highlands Region or to receive compensation, but that the developer had failed to pursue those options.[163]

In 1999, OFP's predecessor in title had secured municipal approval to subdivide the parcel into twenty-six residential lots, subject to a variety of conditions. Some of those conditions involved monitoring to determine if pollutants from an adjacent Superfund site (Combe Fill South)[164] were to begin in the future seeping to the surface on the residential lots. The former owner challenged those conditions in the Superior Court, and also sued the municipality to extend the municipal water line under a public road to the property. Those lawsuits resulted in an order striking and modifying several conditions of the subdivision approval, and a settlement allowing extension of the water line. OFP, by now the owner, also obtained several land use approvals from the DEP, allowing development activities in and near wetlands and streams on the site. However, OFP had not yet obtained a permit to construct a potable water system under the Safe Drinking Water Act.[165] The Highlands Act became effective on March 29, 2004, the date of its introduction in the legislature.[166] DEP issued the potable water system permit on May 14, 2004. Accordingly, development of the property was subject to the Act.

OFP wanted to develop its property as originally planned, without any of the preservation area restrictions that the Highlands Act would have imposed. OFP sued DEP in Superior Court, alleging that the development restrictions of the Act violated the Fifth Amendment of the U.S. Constitution, and Article I, paragraph 20 of the New Jersey Constitution. OFP also alleged that the retroactive application of the Act to its property violated the equal protection and due process guarantees of the U.S. and New Jersey constitutions. The developer claimed that compliance with the Act would involve undue delay and would not adequately compensate him for what he had said was the return he expected on his investment in the property. OFP further alleged that the designation of its property within

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[162] N.J. STAT. ANN. § 13:20-13.
[163] OFP, 395 N.J. Super. at 590.
[164] *See* U.S. Environmental Protection Agency, *Superfund Site Progress Profile: Combe Fill South Landfill*, http://cfpub.epa.gov/supercpad/cursites/csitinfo.cfm?id=0200489 (last visited Apr. 20, 2009).
[165] N.J. STAT. ANN. § 58:12A-1 to -37.
[166] *Id.* § 13:20-28.

the preservation area was improper because the Highlands Council had not completed the Master Plan and TDR program within eighteen months of its first meeting, as prescribed by the Act.[167] The courts rejected all these arguments and upheld the Act and its broad and important purposes. The court also noted that the DEP's regulations would allow it to waive any of its own rules, in order to avoid a taking, to allow OFP a use of its property that might be contrary to the Highlands regulations.[168] OFP, however, had never requested approval for any land use other than its original 26-unit proposal.

The court ruled that the developer's taking claim was not ripe because it had not applied for a waiver from the Act under its "hardship" provision. The court relied on the well-established principle that "[a] court cannot determine whether a regulation has gone too far unless it knows how far the regulation goes."[169]

The court also found that the Legislature set forth ample rational bases to protect the natural resources of the Highlands Region, including the water supply for over half the population of the State.[170] Legally, as long as a statute is based on a conceivable rational basis, a legislative choice is not subject to fact-finding by the courts.

This case drew national attention because of the important implications for sustainable development, natural resource preservation, and the economics of development. The Highlands Coalition, a group of environmental groups, submitted an *amicus curiae*, or friend of the court, brief to support the application of the Highlands Act before the New Jersey Supreme Court. Two of the Coalition's most important contributions to the Court were to place the case in context by

1) Describing the threat to the Highlands area and the State's water supplies from uncontrolled sprawl and how the Highlands Act responds to this threat; and
2) Discussing the extensive research that has been conducted in New Jersey and around the country on the effects of comprehensive land use regulatory programs on private property values.[171]

The Pacific Legal Foundation also submitted an *amicus curiae* brief in opposition to application of the Highlands Act to the OFP site, arguing that a taking already had occurred.[172]

In its own way, the Highlands Act provides a measure of protection foreseen by the State Potable Water Commission almost one hundred years ago:

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[167] *Id.* § 13:20-8(a).
[168] OFP, 395 N.J. Super. at 588 (citing N.J. ADMIN. CODE § 7:38-6.4(a)(3)).
[169] MacDonald, Sommer & Frates v. County of Yolo, 477 U.S. 340, 348 (1986); OFP, 395 N.J. Super. at 582.
[170] *Id.* at 595-96.
[171] Brief of *amicus curiae* Highlands Coalition at 2, May 27, 2008, *available at* http://www.law.georgetown.edu/gelpi/current_research/documents/RT_Briefs_NJHighlands.pdf (last visited Apr. 20, 2009)
[172] *See* OFP, L.L.C. v. New Jersey, 197 N.J. 419 (2008).

> The Highlands watersheds are the best in the State in respect to ease of collection, in scantiness of population, with consequent absence of contamination, in elevation, giving opportunity for gravity delivery and in softness as shown by chemical analysis. These watersheds should be preserved from pollution at all hazards, for upon them the most populous portions of the State must depend for water supplies. There has been too much laxness in the past regarding this important matter.[173]

V. Conclusion

The Highlands Act is not the first statute in New Jersey or elsewhere to take a regional approach to preserving natural resources and planning for future infrastructure needs. In fact, regulating land use through laws preserving water resources has been a successful strategy.[174] As the Legislature recognized, protecting the main potable water source for over half of the state's population "cannot be left to the uncoordinated land use decisions" of dozens of local government entities and thousands of private landowners.[175]

Many laws in New Jersey have placed a high priority on preserving natural resources, especially waters and wetlands. The legislature previously enacted the Delaware River Basin Compact[176] in 1961; the Hackensack Meadowlands Reclamation and Development Act[177] in 1969; the Coastal Area Facility Review Act[178] in 1973; the Delaware and Raritan Canal State Park Law of 1974[179]; and the Pinelands Protection Act[180] in 1979. Each of those acts delegated primary responsibility to a state entity to supplement the efforts of local zoning and planning bodies, to protect natural resources by regulating land uses.

The Delaware River Basin Compact, the Delaware and Raritan Canal State Park Law, and the Pinelands Protection Act mainly preserve water courses and land areas that drain into and recharge surface water supplies and aquifers. The Pinelands National Reserve in southern New Jersey, for example, is an almost flat, sandy area of 1.1 million acres, covering 22% of the area of the state, atop an aquifer estimated at 17 trillion gallons of potable groundwater. The Hackensack Meadowlands Reclamation and Development Act and the Coastal Area Facility Review Act preserve a variety of natural resources, with tidal wetlands in the Meadowlands and wetlands and water resources in the coastal area among the resources to be preserved.

In addition to these regional regulations, two state statutes regulate water supply statewide: the Water Supply Management Act[181] and the Water Quality Planning Act.[182] The first act recognizes that "the water resources of the State are public assets of the State

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[173] Highlands Council 2004 Annual Report, *supra* note 52, at 1 (*quoting* 1907 Potable Water Commission Report).
[174] For a set of engaging articles on this concept, *see* CRAIG ANTHONY ARNOLD, WET GROWTH: SHOULD WATER LAW CONTROL LAND USE? (Environmental Law Institute 2005).
[175] N.J. STAT. ANN. § 13:20-2.
[176] Adopted by New Jersey through N.J. STAT. ANN. §§ 32:11D-1 to -115.
[177] *Id.* §§ 13:17-1 to -106.
[178] *Id.* §§ 13:19-1 to -44.
[179] *Id.* §§ 13:13A-1 to -15.
[180] *Id.* §§ 13:18A-1 to -58.
[181] *Id.* § 58:1A-1 *et seq.*
[182] *Id.* § 58:11A-1 *et seq.*

held in trust for its citizens and are essential to the health, safety, economic welfare, recreational and aesthetic enjoyment, and general welfare, of the people of New Jersey; that ownership of these assets is in the State as trustee of the people."[183] The second act commits the State "to restore and maintain the chemical, physical, and biological integrity of the waters of the State, including groundwaters, and the public trust therein."[184] The Highlands Act joins those laws in ensuring a sustainable future for the environment, the economy, and the people of New Jersey.

[183] *Id.* § 58:1A-2.
[184] *Id.* § 58:11A-2.