A DEFINING RESOURCE: LOUISIANA'S PLACE IN THE EMERGING WATER ECONOMY[+]

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I. WATER—LOUISIANA'S DEFINING RESOURCE

Louisiana has a long and complex relationship with water. Culturally and economically, water has shaped Louisiana in powerful and obvious ways. Legally, the relationship has been obscure, defined more by specific uses and periodic crises that command intense but brief attention than by a systematic approach to management. Louisiana is hardly unique in this regard; indeed, this has been the general approach that "wet" eastern and southern states have taken to water management and law. As a result, water law, as a field of practice and study, has received relatively little attention.

The state is facing a future in which water, even in Louisiana, will be a scarce resource that will demand a well-thought-out and integrated approach to its stewardship. Indeed, that time has arrived. The need to purposefully balance navigation, flood control, environmental, agricultural, industrial, and drinking water supplies is already pressing and becoming more so. As if things are not complicated enough, regional and interstate water needs are also growing, as are energy-driven water uses.

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Louisiana has begun to respond to these new challenges. In 2001, the legislature passed Act 446 that, together with later amendments, created a framework for assessing the health of the state's groundwater resources and regulating their use.[1] In 2010 the legislature enacted two bills, Act 955[2] and House Concurrent Resolution No. 1,[3] that have already affected a major change in Louisiana surface water use and regulation and will likely lead to a revolution in Louisiana water law in the years to come.

II. THE NEW WATER ECONOMY

For much of human history water was the resource that defined where people lived, what they grew, how they travelled, how they moved goods, and how societies and economies developed. Great cities bordered rivers or lakes. Major ports developed at the intersection of rivers and the sea. That model changed radically in the late nineteenth and early twentieth centuries with the development of fossil fuels and new technologies that, for the first time, allowed large-scale urban and agricultural development without close proximity to a source of fresh surface water. As the massive shift of populations and industries from the Northeast and the Midwest to the Sunbelt demonstrated, factors such as the availability and price of land and labor and growing dominance of highway, air, and rail transportation became the keys to development. Water remained essential, but increasingly it could be moved to where development was occurring rather than drawing development to where the water was located. This pattern shaped the growth of

1. Act 446, 2001 Reg. Session (La. 2001). Act 446 enacted LA. REV. STAT. ANN. § 36:4(V) and Chapter 13 C of Title 38 of the Louisiana Revised Statutes to create the Ground Water Management Commission. This also created a ground water management program and mandated the development of a plan to implement a statewide comprehensive water management system (including surface water) for submission to the legislature in 2003. These sections were repealed in 2003 when the legislature revamped the ground water management program in § 4 of Act 49 of the Louisiana Regular Legislative Session. Act 49, 2003 Reg. Session (La. 2003). The resulting program is rooted in LA. REV. STAT. ANN. §§ 36:358(C), 36:359(K), 38:3097.1-.6, & 36:802.18. The comprehensive water management plan called for by Act 446 was never completed.

2. Act 955 of July 2, 2010, ch. 9B, 2010 La. Sess. Law Serv. 955 (West) (creating LA. REV. STAT. ANN. §§ 30:961-963).

3. H.R. Con. Res. 1, 2010 Leg., Reg. Sess. (La. 2010).

older cities, such as New York City and Boston,[4] much of the Southwest, and cities such as Phoenix, Los Angeles, Las Vegas, and Denver.[5] It was even central to the burgeoning growth of eastern "boom cities" like Atlanta and Charlotte.[6] At the heart of all of this was the paradigm that water is abundant, cheap, and available—a paradigm that is now changing and changing fast.

Just as oil came to define much of the economic and social development in the twentieth century, water is increasingly seen as the defining resource of the twenty-first century.[7] Whether or not water is "the new oil," as some have claimed,[8] it is clear that the availability of dependable supplies of fresh water is already transforming our economic and cultural landscapes. As the state's and the nation's growth, energy, and environmental priorities evolve, water is often the common denominator.

A. GROWTH

The go-go expansion of the Southwest and the Southeast was made possible, in large part, by water management decisions made decades ago. The dams and hydropower projects on western rivers, such as the Colorado River, allowed cities and farms to grow in deserts. Las Vegas typifies that explosive growth and the reality of the water crisis. At the end of the twentieth century and during the early years of the twenty-first

4. *See, e.g.*, New Jersey v. New York, 283 U.S. 336 (1931); Connecticut v. Massachusetts, 282 U.S. 660 (1931).

5. An excellent summary of the development of these and other cities and the challenges they are now facing can be found in ROBERT GLENNON, UNQUENCHABLE: AMERICA'S WATER CRISIS AND WHAT TO DO ABOUT IT (Island Press 2009). Between 1990 and 2000, the nine fastest growing states (with growth increases between 66.27% and 21%) were Nevada, Arizona, Colorado, Utah, Idaho, Georgia, Florida, Texas, and North Dakota. All of those states have evident water supply problems and, except for Florida and Georgia, are traditionally arid states with few, if any, major lakes or rivers. *See*, *Population Growth Rankings*, CENSUSSCOPE.ORG, http://www.censusscope.org/us/rank_popl_growth.html.

6. *See, e.g.*, Joseph W. Dellapenna, *Interstate Struggles Over Rivers: The Southeastern States and the Struggle Over the 'Hooch'*, 12 N.Y.U. ENVTL. L.J. 828, 829 (Atlanta); Reply Brief of the City of Charlotte in Response to Exceptions of the State of South Carolina at 3-5, South Carolina v. North Carolina, 131 S. Ct. 855 (2010).

7. *See, e.g.*, Jeneen Interlandi, *The New Oil*, NEWSWEEK, Oct. 8, 2010, at 40, *available at* http://www.newsweek.com/2010/10/08/the-race-to-buy-up-the-world-s-water.html.

8. *See id.*

century, Las Vegas was the fastest growing city in the nation.[9] Thanks to water from Lake Mead, a massive reservoir created on the Colorado River by Hoover Dam, Las Vegas was able to grow from a town of less than five thousand in 1920[10] to a metropolis of more than 1.5 million people by 2000.[11] Local officials expect it to add another 1.2 million by 2020.[12] All of those people need water, water that nature did not make readily available and the future availability of which is already in doubt.[13]

Other examples are the dams on eastern rivers like the Chattahoochee and the Catawba, which provide water for the growing metropolises of Atlanta and Charlotte—neither of which is located on a surface water body. But those cities, and others, have grown beyond their water means and are now facing severe water shortages, shortages they are determined to overcome even it means taking water from somewhere—and someone—else. One need not look far to see the proof of this. South Carolina and North Carolina recently settled a suit filed by South Carolina in the United States Supreme Court to prevent North Carolina from diverting flows from the Catawba River.[14] Even more revealing is a recent report on the ten biggest American cities that are

9. *See* Population Change and Distribution 1990-2000, Census 2000 Brief, U.S. CENSUS BUREAU, http://www.census.gov/prod/2001pubs/c2kbr01-2.pdf (last visited Sept. 22, 2011).

10. Clark County, Nevada, http://www.clarkcountynv.gov/depts/assessor/Pages/default.aspx.

11. *Id.*

12. *See* GLENNON, *supra* note 5, at 8.

13. Las Vegas and other cities in the Southwest depend on Colorado River water not only for commercial and domestic supply but also for electricity production. Growing demand for Colorado River water has combined with diminished river flows and an overly optimistic view of what that River's normal flow volume is have resulted in historic low water levels in the Keystone, Lake Mead, and Lake Powell reservoirs. These conditions have already spawned calls for new approaches to managing water supplies and coping with water shortages. *See* COLORADO RIVER GOVERNANCE INITIATIVE, *Rethinking the Future of the Colorado River*, DRAFT INTERIM REPORT 4-10 (Dec. 2010), http://www.rlch.org/archive/?p=1660; Shaun McKinnon, *Lake Mead sinks to new historic low*, ARIZONA REPUBLIC, Oct. 19, 2010, http://www.azcentral.com/arizonarepublic/news/articles/2010/10/19/20101019lake-mead-water-level-new-historic-low.html.

14. South Carolina v. North Carolina, 131 S. Ct. 855 (2010). On December 3, 2010, this suit was settled without effecting an actual apportionment of the river, though it did provide a new approach to how proposed out-of-basin transfers would be handled. *See* Meg Kinnard, *SC atty general says deal settles NC water dispute*, ASSOCIATED PRESS, Dec. 21, 2010, *available at* http://finance.yahoo.com/news/SC-atty-general-says-deal-apf-3698995604.html?x=0.

running out of water, a list including a number of cities in the Gulf South that grew dramatically over the past fifty years (Atlanta, Houston, and Orlando), often at the expense of Louisiana's cities and towns.[15]

Georgia is in a seemingly endless struggle with Florida and Alabama over the Chattahoochee, Flint, and Apalachicola rivers.[16] At the heart of that dispute is the future water supply for the city of Atlanta and the uses of the water in Lake Lanier, a reservoir in northeastern Georgia constructed by the U.S. Army Corps of Engineers on the Chattahoochee River in 1957. Over time, the U.S. Army Corps of Engineers has allowed increased allocations of water from the Lake for Atlanta's municipal water supply, allocations that the City of Apalachicola, Florida, Southeast Federal Power Customers, Inc., and the State of Alabama have challenged as violating the authorized uses of the reservoir.[17] During the course of this longstanding—and, as of this writing, still unresolved—dispute, a federal district court ruling in favor of the challengers threatened to reduce Atlanta's withdrawals by approximately forty percent.[18] Subsequently the Eleventh Circuit Court of Appeals reversed and remanded the trial court's ruling,[19] but Atlanta's troubles are hardly over. In late 2007 and 2008, growing water demand, drought, and limited water supply brought Atlanta within three months of running out of water.[20]

Stories about Atlanta and Las Vegas running dry make for high drama but tend to create false impressions about how water

15. Charles B. Stockdale et al., *The Ten Biggest American Cities That Are Running Out Of Water*, 24/7 WALL ST., Oct. 29, 2010, http://247wallst.com/2010/10/29/the-ten-great-american-cities-that-are-dying-of-thirst/. With respect to New Orleans' loss of economic stature, *see* JOHN M. BARRY, RISING TIDE: THE GREAT MISSISSIPPI FLOOD OF 1927 AND HOW IT CHANGED AMERICA 410-11 (Simon & Shuster 1998).

16. The Chattahooche River rises in northeastern Georgia and flows southwest along much of the Georgia – Alabama border where it is joined by the Flint River to form the Apalachicola River.

17. The first of these suits was filed in 1990 by the State of Alabama. That case, as well as the others, has been consolidated into *In re* MDL-1824 Tri-State Water Rights Litig., No. 09-14657, 2011 WL 2536507 (11th Cir. June 28, 2011).

18. *See* In re Tri-State Water Rights Litig., 639 F. Supp. 2d 1308 (M.D. Fla. 2009). *See also*, Sharlene Leurig, *The Ripple Effect: Water Risk in the Municipal Bond Market*, CERES (Oct. 2010), http://www.ceres.org/resources/reports/water-bonds.

19. *See*, In re MDL-1824 Tri-State Water Rights Litig., No. 09-14657, 2011 WL 2536507 (11th Cir. June 28, 2011).

20. *Id.*

shortages—and the new water economy—will play out. The prospect that taps will run dry, or of some urban equivalent of the dust bowl exodus, are almost certainly far-fetched. Life in water-challenged places will go on, but it will change. There will be new water conservation regimes, rising costs for both water and energy (as America's electric grid is heavily dependent on water), and more creative approaches to getting water. Another likely change is the assumption that growth is a given and that water is available to support growth, or even to maintain current population and water use levels.

Perhaps the biggest change that is unfolding is the effect of water availability on the economic climate. Water issues and shortages that were historically seen as localized or temporary are now being looked at in a broader and more systemic light. Increasingly investors and risk managers are looking beyond assumed water supplies and glib projections of growth and vitality to whether companies and public entities are, in fact, hydrologically solvent. On January 27, 2010, the Securities and Exchange Commission issued interpretive guidance on disclosures related to climate change, observing that, "[c]hanges in the availability or quality of water . . . on which the registrant's business depends . . . can have material effects on companies."[21] Moreover, recently Ceres, a national coalition of investors, and environmental and public interest groups published a report calling for water risk to be addressed by municipal bond rating agencies.[22] In short, water risk is now beginning to shape how people perceive business and investment risk.[23]

It is an undeniable fact that availability and affordability of water is already influencing growth patterns around the country. As a state with a relative abundance of water, Louisiana must decide whether it wants to develop methods to export its water to facilitate growth elsewhere, or it wants to use its last great natural resource to attract and retain development here.

21. Commission Guidance Regarding Disclosure Related to Climate Change; Final Rule, 75 Fed. Reg. 6290, 6291 (Feb. 8, 2010) (to be codified at 17 C.F.R. pts. 211, 231, 241).

22. Leurig, *supra* note 18.

23. *See*, *e.g.*, Brooke Barton, *Murky Waters? Corporate Reporting on Water Risk*, CERES (Feb. 2010), http://www.waterfootprint.org/Reports/Barton_2010.pdf.

B. ENERGY

While catchy, slogans about water being the new oil are misleading. Water may supplant oil as the defining natural resource for growth and vitality, but it surely does not reduce the importance of oil and other energy sources. Indeed, the importance of energy supply and policy will likely only grow in significance. But what is often left out of national and local energy discussions is the fact that energy policy and water policy are inseparable. From the production of oil and natural gas to the generation of electricity by nuclear power, coal, gas, the sun, or flowing water, the common requirement is an adequate supply of water to drive turbines or to serve as a cooling agent.

The importance of water in this sector is impossible to overstate. According to the U.S. Geological Survey, thermoelectric power generation requires 201 billion gallons of water each day and accounts for forty-nine percent of the nation's annual water withdrawal.[24]

Additionally, as the nation strives for both energy independence and alternatives to high carbon fuels, such as coal, it is forced to look for oil and natural gas in geologic formations that do not yield them willingly. Accordingly, in Louisiana and other places, oil and gas development has shifted from highly pressurized fields to tapping oil and gas deposits that are bound up in shale and tar sand formations, which require the use of millions of gallons of water per well to liberate. The development of Louisiana's Haynesville Shale Field has required an average of more than 4 million gallons of water per well, and that is water that may already have other users and uses that are not easily reconciled with the new energy uses.[25]

Finally a word needs to be said about the role of water in the burgeoning field of biofuels. Biofuels are fuels that are produced from a biological source and include bioethanol, which is based on fermented sugars from starchy plants such as corn or cellulose plants. The merits of biofuels are the subject of an ongoing public debate. What is not debatable about them is that they are water

24. Joan F. Kenny, et al., *Estimated Use of Water in the United States in 2005*, U.S. GEOLOGICAL SURVEY CIRCULAR 1344, at 5, 38 (2009), http://pubs.usgs.gov/circ/1344/pdf/c1344.pdf.

25. Per John Adams, 2010 LA. ST. B. ASS'N ENVTL. SEC., Meeting Presentation, Slide 20, New Orleans, La., (Nov. 12, 2010).

dependent, and thus, a shift to biofuels will require more water withdrawal and consumption than conventional fossil fuels. The same is true of a shift to cars, buses, and trains that are powered by electricity.[26] Those changes may be necessary and very beneficial, but their water dependence also needs to be understood and appreciated.

C. ENVIRONMENT

No place is more dependent on a reliable supply of fresh water for its environmental survival than Louisiana. The lower third of the state is largely a vast complex of marshes and swamps that are creatures of the state's intricate network of bayous and rivers. The well-documented decline of coastal Louisiana is best understood as the collapse of one of the world's greatest estuary complexes. Estuaries are places where freshwater from rivers mixes with the saltwater from the sea. That simple definition belies their ecologic and economic importance. Generally, estuaries are great nurseries for fish and wildlife and have been the anchors for the development of many of the great cities and cultures of our nation and the world. Specifically, the estuaries of coastal Louisiana comprise the largest and most productive coastal wetland ecosystem in the United States.[27]

The Louisiana government and the federal government have devoted years and millions of dollars to developing plans to stem the loss of coastal wetlands. Those plans are elaborate and complex, but, at their core, they all depend on restoring riverine flows to the coast. The investment of time, money, and water is not justified on abstract environmental values; rather, it is justified based on the services that the ecosystem provides to the communities, cultures, and economies that rely on it for storm buffering, water filtration, fisheries production, among other things.

Louisiana's wetlands provide an even more direct underpinning of coastal communities because this "working

26. *See* Carey W. King & Michael E. Webber, *Water Intensity of Transportation*, 42 ENVTL. SCI. & TECH. 21 (2008), *available at* http://pubs.acs.org/doi/pdfplus/10.1021/es800367m.

27. *See, e.g.*, U.S. ARMY CORPS OF ENGINEERS, 1 LOUISIANA COASTAL AREA, LOUISIANA ECOSYSTEM RESTORATION STUDY MAIN REPORT MR1-1 (2004), http://www.clear.lsu.edu/pdfs/clear_report_20081016141217.pdf.

coast" is the home of millions of residents who are literally witnessing the ground disappear beneath their homes and feet. If land loss follows current observed trends,[28] not to mention the much more dire, but scientifically supported projections, massive population relocation will be necessary and will have untold economic consequences.

The importance of instream flows is not just a matter of saving coastal Louisiana; it is integral to environmental stewardship across the state and the nation.[29] The simple truth is that our nation's water resources cannot be safeguarded by regulations alone; they are increasingly dependent on conservation and restoration efforts that are rooted in water.

Moreover, our state and nation have compelling plans and priorities for their waters. Unfortunately, those plans and priorities frequently conflict with one another. The water economy will inevitably be called on to reconcile, balance, and prioritize these needs and desires, but it will not be able to function on a simple market format—water is too essential to life and the public interest to allow that. How that economy is going to develop is still a work in progress, but it is beyond question that it will take shape and that those who prepare will fare the best in it.

III. WATER AND THE LAW

Two schools of thought traditionally dominate American water law. One school of thought, dominating in the wetter, eastern half of the country, essentially views water as a commons that is shared by all who have legal access to it. This is the domain of the legal doctrine of "riparianism," which affords rights of reasonable use to the owners of land abutting flowing waters.[30]

28. *See, e.g.*, Michael D. Blum & Harry H. Roberts, *Drowning of the Mississippi Delta due to insufficient sediment supply and global sea level rise*, NATURE GEOSCIENCE (June 28, 2009), http://www.nature.com/ngeo/journal/v2/n7/abs/ngeo553.html.

29. For example, efforts to restore the Everglades, San Francisco Bay, and the Sacramento-San Joaquin Delta are all dependent on securing and maintaining fresh water inputs.

30. Justice Story's landmark opinion, *Tyler v. Wilkerson* in 1827, remains perhaps the best description of traditional American riparianism and the nature of a riparian's rights to the flowing waters that abut his or her property as being a right common to all riparians. Tyler v. Wilkerson, 24 F. Cas. 472 (D.R.I. 1827) (No. 14,312). *See also* "riparian right," BLACK'S LAW DICTIONARY 1352 (8th ed. 2004).

This is the approach that Louisiana has traditionally followed and will be further discussed later.[31]

The second approach views water as a scarce resource and grants prioritized rights of use to whoever puts it to a beneficial use first, without regard to proximity to the source of the water. This concept is at the heart of the "prior appropriation" system that dominates water law in the drier, western half of the nation.[32]

There have been two clear trends in American water law, one being to view water in more utilitarian terms and less as an appurtenant land right. This progression can be seen in the demise of "natural flow" riparianism[33] in favor of "reasonable use" ripariansim,[34] regulated riparianism, and prior appropriation doctrines.[35]

The second major trend has been to recognize the importance of water to environmental and cultural sustainability. This trend has emerged out of the growing appreciation of the broad and deep values of instream flows and ground water protection. Legally, this involved integrating private water rights with public rights and duties through doctrines such as the public trust doctrine,[36] reserved rights, and overarching federal laws, such as

31. *See* Water Law in Louisiana, *infra* Part III.B.

32. This doctrine generally recognizes that persons who take water from public flowing waters and put it to beneficial use have a right to that water in preference to persons who come later. This doctrine also applies to groundwater in some states. *See* JOSEPH L. SAX, ET AL., LEGAL CONTROL OF WATER RESOURCES 13 (4th ed. 2006).

33. The natural flow doctrine allowed owners of land adjacent to a flowing stream or river to use water for their domestic purposes but required that they not change the natural flow of the stream in terms of quality or quantity. This restricted the use of stream water to the water front property and, even then, to uses in the same drainage basin. *See* Joseph Dellapenna, *The Right to Consume Water Under "Pure" Riparian Rights*, 1 WATERS AND WATER RIGHTS § 7.02 (C) (Robert E. Beck, ed., 2001 replacement vol. & Supp. 2005).

34. Reasonable use riparianism grew out of traditional "natural flow" riparianism in the nineteenth century. Societal and economic changes such as water mill driven industries prompted courts to depart from the natural flow doctrine and allow uses that were reasonable, including commercial uses that would not have been allowed under traditional riparianism.

35. *See* Dellapenna, *supra* note 33, at § 7.01(b).

36. The public trust doctrine is a body of law that imposes more stringent managerial duties on state governments in their management of navigable waters and water bottoms. Originally this doctrine was imposed as a function of federal law, *e.g.*, Ill. Cent. Ry. v. Illinois, 146 U.S. 387 (1892) and Phillips Petroleum v. Mississippi, 484 U.S. 469 (1988), but it has been modified in the hands of the states.

the Endangered Species Act[37] and the Clean Water Act.[38] In Louisiana, this public values view of water is at the very heart of the high profile plans and programs aimed at preventing the collapse of the estuaries and wetlands of coastal Louisiana.[39]

The simultaneous development of a more utilitarian approach to water law and a more public interest focused approach has unsurprisingly led to tension, and that tension is likely to only grow as the competition over water for energy, transportation, agriculture, public supply, and ecologic purposes deepens. For much of the twentieth century, the general trend was toward treating water as more of a commercial product, with some advocating that water markets were the best vehicles for sorting out water uses and allocations.[40]

Clearly, using markets to manage water can work to some degree, but the paradigm that water is just another bulk commodity that can be sent to where it is wanted, like coal or crops, is a false one, and its limits are beginning to show. The same can be said for regimes that treat it as a commons.[41] Fresh water plays a unique role in human society and in our ecology that makes it physically, morally, legally, and economically

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Beyond the question of the ownership of the bottoms of navigable waters, a topic that has been contentious at times in Louisiana, Louisiana has unquestionably extended the breadth of the public trust beyond navigable waters to include all of the state's natural resources. Article 9, § 1 of Louisiana's constitution states:

> The natural resources of the state, including air, water, and the healthful, scenic, historic, and esthetic quality of the environment shall be protected, conserved, and replenished insofar as possible and consistent with the health, safety, and welfare of the people. The legislature shall enact laws to implement this policy.

LA. CONST. art. IX, § 1. The Louisiana Supreme Court has recognized this constitutional language as creating a public trust mandate. *See* Save Ourselves, Inc. v. La. Envtl. Control Comm'n, 452 So. 2d 1152, 1154 (La. 1984). In the same case, the Louisiana Supreme Court expressly affirmed the public trust nature of the state's ownership of navigable waterbottoms. *Id.*

37. 16 U.S.C. § 1531 (1988).

38. 33 U.S.C. § 1251 (1987).

39. *See*, *e.g.*, COASTAL PROTECTION AND RESTORATION AUTH. OF LA., INTEGRATED ECOSYSTEM RESTORATION AND HURRICANE PROTECTION: LOUISIANA'S COMPREHENSIVE MASTER PLAN FOR A SUSTAINABLE COAST, Chapter 3: The Master Plan (2007), *available at* http://www.lacpra.org/assets/docs/Comprehensive%20Master%20Plan%20%28Main%20Report%29%20-%20chapter%203.pdf.

40. *See* Stephen F. Williams, *The Requirement of Beneficial Use as a Cause of Waste in Water Resource Development*, 23 NAT. RESOURCES J. 7, 11-15, 20 (1983).

41. Symposium, *Developing a Suitable Water Allocation Law for Pennsylvania*, 17 Vill. Envtl. L.J. 1, 16-17 (2006).

different from any other substance. It is not just another article of commerce and, despite that it is a renewable resource, water often provides a wide variety of services that are specific to certain times and places.

Just how valuable fresh water has become and how central it is to economic growth and vitality has come in to sharp focus in recent years. Nationally and internationally, headlines and reports point to the simple truth that fresh water has become a strategic resource that increasingly pits the interests of the places that need it against the places that have it.[42] While Louisiana has a vast water resource, it also has a growing and critical need for water. For those reasons, Louisiana will find itself increasingly drawn into internal and interstate water discussions and disputes, and its success in protecting its interests will largely turn on the applicable water laws.

A. WHAT IS WATER LAW?[43]

Traditionally, the term "water law" has described the body of law governing the use and control of water.[44] By and large these were matters of state law and were originally focused on fresh and navigable surface waters.[45] To the extent groundwater was an issue, it was considered a distinct and different resource, which was governed by different laws and policies. Needless to say, the field has evolved significantly over the past century and a half and now encompasses surface water, ground water, environmental mandates, interstate and international interests, public and private rights, and a growing role for the federal

42. *See*, *e.g.*, SANDRA POSTEL, LAST OASIS: FACING WATER SCARCITY (W.W. Norton & Co. 1997).

43. Portions of this section are adapted from Mark Davis, Paper Presentation to the 56th LSU Mineral Law Institute (2009).

44. *See*, George A. Gould, *Water Rights Systems*, *in* WATER RIGHTS IN THE EASTERN UNITED STATES 8-10 (Kenneth R. Wright, ed. 1998). This description of water law is intended to be instructive rather than definitive. As a practical matter. water law that developed provided the greatest utility, which meant navigable waters and fresh surface water. As water use, technology, and public interests changed, so have the bounds of water (and so will they). Examples of this evolution can be seen in the growing importance of ground water and salt water in water law as pumping and desalination technologies have advanced to make them more usable.

45. While a summary of the water laws, as they have developed in the various states, is beyond the scope of this article, a helpful, though partial, discussion may be found in an insightful article by Professor Dellapenna. *See* Joseph W. Dellapenna, *The Law of Water Allocation in the Southeastern States at the Opening of the Twenty-First Century*, 25 U. ARK. LITTLE ROCK L. REV. 9 (2002).

government. It has been shaped not so much by logic as by necessity.

As mentioned above, in the wetter, eastern half of the United States, the central tenet of water law is "riparianism," a common law concept rooted in civil law traditions. Under riparian law, the right to access and use water is a function of owning land adjacent to the water body.

In the drier, western half of the nation with its vast tracts of federal lands, the central tenet of water law is the doctrine of "prior appropriation," which creates prioritized private rights of water use based on diverting water and putting it to some reasonable and beneficial use.[46] In these states, water law has developed into a well-established set of laws and procedures and is an active area of legal practice, driven in large part by the competition for an always scarce resource by a growing population and economy. The adage often attributed to Mark Twain, that "Whiskey is for drinking and water is for fighting over," was born of this experience.

No two states have exactly the same system of water law, a fact that makes it perhaps one of our most American and chaotic areas of law.[47] The boundaries and dimensions of water law continue to change as states contend with growing demand and shifting supplies of fresh water. If there is a defining trend in water law and management, it is that we are entering an era of deepening water scarcity, both in the chronically dry west and the traditionally water rich east and south. This is a condition that our nation's collection of water laws is poorly equipped to deal with—one that Louisiana would be wise to anticipate and prepare for.

B. WATER LAW IN LOUISIANA

Louisiana water law, like that of most water-rich states, is more of a hodgepodge than a systematic approach to ordering and managing water resources. It has been shaped more by the abundance of our waters than by any experience with scarcity. Accordingly, our jurisprudence has focused on drainage, the ownership of banks and water bottoms, and rights of access

46. *See*, SAX, ET AL., *supra* note 32, at 152-59.

47. *See, e.g.,* DAVID GETCHES, WATER LAW IN A NUTSHELL 3-11 (Thomson West 4th ed. 1997).

rather than questions of who can divert or pump water and where and how it can be used.[48]

True to its wet-state roots, Louisiana law treats surface water and ground water as completely distinct from one another. Truer yet, until very recently was the pervasive sense that under Louisiana law water is more of an inconvenience than an asset. Those attitudes are now changing in the face of growing regional and local demand, changing climates, and the growing role that freshwater management will have to play if coastal Louisiana's wetlands—and their associated communities, cultures, and economies—are to survive and thrive. Louisiana is on the threshold of a new era of water law and management. To understand the current state of water law in Louisiana and how it may develop further, it is important to understand the various sources of Louisiana law and the emerging conditions that are prompting commentators to predict that water will be the defining natural resource of this century.

1. SURFACE WATERS AND LOUISIANA RIPARIANISM

Historically, Louisiana law has fallen in line with the riparian traditions that underlie most surface water laws in the eastern half of the United States.[49] Despite that, Louisiana's civil code traditions, combined with the paucity of jurisprudence, have nurtured confusion and speculation over how to characterize Louisiana law on the subject of surface waters. The nagging question seems to be if and how the common law concept of riparianism could be expressed in Louisiana's Civil Code and statutes. Fortunately, we need not dwell on this for several reasons. First, the governing Code articles[50] and the applicable

48. *See, e.g.,* Gulf Oil Corp. v. State Mineral Bd., 317 So. 2d 576 (La. 1957); Dardar v. LaFourche Realty Co., Inc., 55 F.3d 1082 (5th Cir. 1995); Vaughn v. Vermilion Corp., 444 U.S. 206 (1979).

49. *See, e.g.,* Dellapenna, *supra* note 45, at 73-77. Not all commentators agree with this conclusion. Some, such as Professor David Getches, view Louisiana water law as a distinct hybrid adapted from the French Civil Code. *See* GETCHES, *supra* note 47. The fact that some confusion and disagreement exist over the origins of Louisiana water law should not be surprising, since there is no complete agreement on the origins of riparian law in general. Indeed, some scholars contend that the roots of riparian law in the United States actually lie in civil law. *See, e.g.,* A. DAN TARLOCK, LAW OF WATER RIGHTS AND RESOURCES § 3.6 (West 2002). *See also* Dellapenna, *supra* note 35, § 7.01(b).

50. LA. CIV. CODE ANN. arts. 657 & 658 (2008), which will be discussed in more detail later.

(if sparse) jurisprudence are clearly supportive of a riparian approach. Second, it is increasingly clear that riparian law, as it evolved in the nineteenth century, borrowed more from the Code Napoleon than any ancient English legal traditions.[51] Accordingly, it should hardly be surprising that Louisiana law is consistent with a doctrine that shares a civil code heritage. This also means that the experience of other riparian states with a richer jurisprudential history might be instructive for Louisiana. Regardless of how Louisiana got there, it is beyond dispute that the state respects riparian rights but that those rights are not absolute and are subject to regulation by the state and its political subdivisions.

a. Water as a Public Trust Resource

Article 9, § 1 of the Louisiana constitution declares that the natural resources of the state "including air and water, and the healthful, scenic, historic, and esthetic quality of the environment shall be protected, conserved, and replenished insofar as possible and consistent with the health, safety, and welfare of the people" of the State of Louisiana.[52] This duty has been characterized by the Louisiana Supreme Court as constituting a "public trust doctrine"[53] that imposes a mandate on the state via implementing legislation to maintain, protect, and enhance its environment via (among other things) the regulation of water control, scenic rivers and streams, and the development, coordination, and implementation of statewide policies and programs to safeguard the environment and ensure the most advantageous use of the state's natural resources.[54]

This constitutional public trust doctrine is distinct, though not entirely separate, from the public trust doctrine that applies to the ownership of water bottoms beneath navigable waters. The constitutional public trust doctrine is rooted in the state's role as a protector of public health and welfare where the latter is rooted in a property interest that is held in trust for the people of the state.

The public trust ownership of navigable water bottoms is

51. LA. CIV. CODE ANN. arts. 657 & 658 (2008).

52. LA CONST. art. 9 § 1.

53. *See* Save Ourselves, Inc. v. La. Envtl. Control Comm'n, 452 So. 2d 1152 (La. 1984).

54. *Save Ourselves*, 452 So. 2d at 1154.

rooted in long standing common law and civil law traditions and was first expressed by the United States Supreme Court in its landmark case, *Illinois Central Railway Co. v. Illinois*.[55] In that case, the Supreme Court held that, as a matter of federal law, all states took ownership of the lands beneath the navigable waters within their borders at the time they entered the Union and that those lands were to be held in trust (i.e., they were to be kept for certain public purposes and were not generally susceptible of private ownership) for the people of the state.[56] For these purposes, waters were considered to be navigable if they were either (1) navigable in fact or (2) subject to the ebb and flow of the tide at the time of statehood.[57] As absolute as the language of the Supreme Court appears on one hand, it is also clear that the Court recognizes that under certain circumstances states may limit or abrogate the trust nature of water bottom ownership.[58] While there has been some dispute on the question of whether Louisiana has retained its tidelands in trust, the leading jurisprudence is unequivocal that it has.[59]

Knowing that the state has fully retained its public trust lands does not provide as much guidance as one might wish when it comes to knowing exactly which water bottoms it covers. The reason for that ongoing confusion is simple since it is a question of fact whether a given waterway or water body is navigable "in fact," and there is no clear map of which areas were subject to the ebb and flow of the tide when Louisiana was admitted to the union in 1812. This is all further complicated by the dynamic nature of Louisiana's coasts and by the lack of a sustained effort by the state to ascertain which water bottoms it owns and in what capacity it owns them.

b. Water as a Common, Public, or Private Thing

The classification of water as a common, public, or private thing determines for what, by whom, and when it can be used.

i. Common Things

Common things, such as the air or the high seas, are not

55. Ill. Cent. Ry. Co. v. Illinois, 146 U.S. 387 (1892).

56. *Id.*

57. *See* Phillips Petroleum Co. v. Mississippi, 484 U.S. 469 (1988).

58. *Id.* at 483.

59. *See* Gulf Oil Corp. v. State Mineral Bd., 317 So. 2d 576 (La. 1975).

owned or ownable by anyone and may be used freely by all in accordance with the uses "nature has intended for them."[60] The language of the Civil Code article defining common things is generally descriptive of what a common thing is, but beyond air and the high seas it provides no insight into what else might be a common thing.

ii. Public Things

Public things are those things owned by the state or its political subdivisions (e.g., parishes or municipalities) in their capacity as "public persons."[61] Property of this sort must be held and used for public purposes and cannot be transferred into private hands unless otherwise allowed by law.[62]

Examples of public things cited by the Civil Code are running waters, the waters and bottoms of navigable water bodies, and the territorial sea and seashore.[63] The Code's specific identification of running waters and navigable waters as public things significantly distinguishes between waters that are running and those that are navigable (though that distinction makes no difference to the water being classified as a public thing).

60. LA. CIV. CODE ANN. art. 449 (1979).

61. LA. CIV. CODE ANN. art. 450 (1979).

62. *See*, Gulf Oil Corp. v. State Mineral Bd., 317 So. 2d 576, 581-89 (La. 1975). This case arose as a concursus proceeding to determine who was entitled to receive oil royalty payments. *Id.* At issue was whether certain lands Gulf Oil was leasing were private or public. *Id.* The lands in question were submerged lands beneath navigable waters. *Id.* The private claimant held land patents issued by the State of Louisiana prior to the enactment in 1921 of the Louisiana constitutional provision barring the divestiture of navigable water bottoms. *Id.* The court initially affirmed the state's ownership on narrow technical grounds but granted rehearing on the broader issues of if and when such lands and waters are susceptible of private ownership. *Id.* Justice Barham's opinion for the court on rehearing (subject to three dissents) clearly intended to clarify the law, albeit at the expense of overruling a line of cases that dated back more than 20 years. *Gulf Oil Corp*., 317 So. 2d 576. The court concluded that by virtue of the navigable waters being in the public domain they were ". . . at the very least (if at all possible) . . . (a)ny alienation or grant of navigable waters by the legislature Must [sic] be express and Specific [sic] and never implied or presumed from general language in a grant or statute." *Id.* (citing California v. Price, 74 So. 2d 1, 21 (La. 1954) (Hawthorne, J., dissenting). The court's discussion of the Civil Code's classifications of public and private things and things that are susceptible of ownership leaves little or no room for running waters being treated differently than navigable waters. *See Gulf Oil Corp*., 317 So. 2d 576.

63. Gulf Oil Corp. v. State Mineral Bd., 317 So. 2d 576 (La. 1975).

Like common things, public things are subject to usage by the public in accordance with applicable laws and regulations. Among the public rights recognized by the Civil Code are the right to fish "in the rivers, ports, roadsteads, and harbors" and a person's right to "land on the seashore, to fish, to shelter himself" as long as no injury is done to the property of adjoining property owners.[64]

iii. Private Things

Private things are owned by private persons (individuals, corporations, etc.) or the state and its political subdivisions in their capacity as private persons.[65] This broad category covers a wide range of what most people understand to be personal property or real estate. This type of property can be bought or sold and generally carries with it no rights of public usage.

iv. Louisiana Riparianism

As noted earlier, the essence of riparianism is the right of a landowner adjacent to a flowing stream to use the waters of that stream for certain purposes. At one time, those uses were restricted to subsistence purposes such as cooking, drinking, and watering stock. Water could not be used off the riparian tract or in a different hydrologic basin. Commercial uses were forbidden and the "natural flow" of the stream (its fundamental quality and quantity) could not be degraded.[66] These riparian rights did not create a property interest in the water itself but rather a right of use that is appurtenant to the ownership of riparian lands.

Unsurprisingly, the "natural flow" doctrine was incompatible with the industrialization and the growth of our state. Something had to change, and it was riparianism that changed, ushering in the development of the doctrine of reasonable use.[67] In essence, the resulting law of riparian rights allowed for traditional domestic uses (referred to as "natural uses") and other, largely commercial, uses to the extent they were deemed

64. LA. CIV. CODE ANN. art. 452 (1979).

65. LA. CIV. CODE ANN. art. 453 (1979).

66. *See*, Merritt v. Parker, 1 N.J.L. 460 (N.J. 1795)

67. The decision by future Supreme Court Justice Story in *Tyler v. Wilkinson*, 24 F. Cas. 472 (C.C.R.I. 1827) rejecting the traditional natural flow doctrine is often credited as landmark in the development of modern riparian law. *See also* SAX, ET AL., *supra* note 32, at 1.

reasonable and not injurious of the rights of other riparians.[68] The reality that the determination of what is reasonable comes only after the fact and may have little predictive value makes this approach of limited use to planners and policy makers, but it was enough to allow for the commercial exploitation of flowing streams and the flowering of American industry and commerce.[69] This also is clearly the approach that Louisiana courts have taken to determining who could use surface waters and for what purposes, at least until the enactment of Act 955 in 2010.[70]

With Louisiana's distinct legal system, any understanding of water law in Louisiana must be rooted in its civil law traditions. The foundation of Louisiana riparianism is found in Louisiana Civil Code articles 657 and 658, which state:

> The owner of an estate bordering on running water may use it as it runs for the purpose of watering his estate or for other purposes.[71]
>
> The owner of an estate through which water runs, whether it originates there or passes from lands above, may make use of it while it runs over his lands. He cannot stop it or give it another direction and is bound to return it to its ordinary channel where it leaves his estate.[72]

Plainly, these articles describe a relationship between riparian lands and the use of the running waters[73] that pass through or next to those lands.[74] It is important to point out that

68. Joseph W. Dellapenna, *The Law of Water Allocation in the Southeastern States at the Opening of the Twenty-First Century*, 25 U. ARK. LITTLE ROCK L. REV. 9, 12 (2002) (internal citations omitted).

69. *See*, SAX, ET AL., *supra* note 32.

70. *See supra* note 2 and accompanying text.

71. LA. CIV. CODE ANN. art. 657 (1978).

72. LA. CIV. CODE ANN. art. 658 (1978).

73. In the past there was a scholarly debate over whether articles 657 and 658 applied only to running or nonnavigable waters. *See* JAMES KLEBBA ET AL., LEGAL AND INSTITUTIONAL ANALYSIS OF LOUISIANA'S WATER LAWS WITH RELATIONSHIP TO THE WATER LAWS OF OTHERS STATES AND THE FEDERAL GOVERNMENT 4-5 (Louisiana Dept. of Transp. & Dev., Office of Pub. Works, 1983). The prevailing view is that the Code articles apply to both navigable and nonnavigable running waters. This paper assumes that view to be correct.

74. Until the passage of Act 955, there was no clear definition of "running water" in Louisiana law. *See supra* note 2 and accompanying text. What is clear from jurisprudence is that it is a question of fact and that it is has been interpreted to exclude sloughs or swamps with no directional current that are fed only by rain or periodic overflow. *See* Hall v. Bd. of Comm'r.s, 35 So. 976, 980 (La. 1904); Verwyvelt

in most states the concept of riparian rights is not limited to flowing waters but also extends to coastal waters, and natural lakes and ponds.[75] But that was not the case in Louisiana until the passage of Act 955.[76] Act 955, importantly, contains a definition of "running surface water," defined as "the running waters of the state, including the waters of navigable water bodies and state owned lakes."[77] Implicitly this seems to undermine or overrule *Verwyvelt*, but it is too early to conclude to what extent since there is almost certainly a class of lakes or ponds that are both nonnavigable and privately owned, and Act 955 by its own terms is set to expire and be of no further effect after 2012.[78]

Just as plain is the fact that there are some limits on how those waters may be used. Article 657, dealing with the rights of owners whose estates border running waters, expressly grants the right to use the water "as it runs" to water the estate or "for other purposes," while article 658 dealing with the rights of owners whose estates are traversed by running waters does not mention any specifically permissible uses or purposes.[79] This should be seen not as a substantive difference but rather as an illustration of the degree of vagueness and linguistic inconsistency that characterizes this entire area of law. The character of the water course, rather than its name, is controlling. Under that general rule, natural waterways with a channel, bed, bank, directional flow, and determinable source of supply are riparian. The requirement that the waters be returned to the channel (in the case of waters traversing an estate) following its use implies a restriction on consumptive uses and on out-of-basin transfers. Both of those restrictions are

v. Armstrong Raterree, Inc., 463 So. 2d 979, 984 (La. Ct. App. 1985). This largely comports with the general common law rule, which states that riparian rights attach to all nondiffuse natural waters. *See, e.g.*, DOUGLAS L. GRANT & GREGORY WEBER, CASES AND MATERIALS ON WATER LAW 245 (8th ed. 2010). Basically, that means storm and floodwaters don't support riparian rights, but streams, bayous, and rivers do.

75. Technically, rights relating to those waters are covered by the doctrine of littoralism, but that is a distinction that has largely been abandoned. *See* SAX, ET AL., *supra* note 32, at 28.

76. Verwyvelt v. Armstrong Raterree, Inc., 463 So. 2d 979, 984 (La. Ct. App. 1985).

77. LA. REV. STAT. ANN. § 30:962(1).

78. Verwyvelt v. Armstrong Raterree, Inc., 463 So. 2d 979, 984 (La. Ct. App. 1985); LA. REV. STAT. ANN. § 30:962(1).

79. LA. CIV. CODE ANN. arts. 657 & 658 (2008).

entirely in keeping with American riparian law traditions, a conclusion borne out by jurisprudence. The leading, and pretty much only, case on this point is the 1925 case of *Jackson v. Walton*, which involved a dispute between a riparian land owner and a nonriparian who, under contract with a second riparian, planned to remove water from Hotchkiss Bayou for irrigation purposes.[80] In dissolving an injunction against the defendant irrigator the court found that the plaintiff had not demonstrated an actual or probable injury to its rights or lands. This case is instructive for several reasons:

- First, it specifically reserved the plaintiff's right to renew the action should conditions (i.e., actual or impending injury) change.
- Second, it is clear that irrigation and, one would assume, other commercial uses are not per se unreasonable and will be allowed to the extent they do not produce or threaten harm.
- Third, the defendant's rights were derivative of a riparian's rights and not couched in terms of a more general right to take and use water. This is directly in keeping with traditional riparian law.
- Finally, the court was careful to note that the irrigator's property was adjacent to another riparian's land and that the pumped water would drain back to the Bayou. This fact would seem to bring the case within the bounds of usage allowed by article 658.

This jurisprudence strongly supports the conclusion that Louisiana law is in step with mainstream riparian law thinking, a conclusion reached by a number of commentators as well.[81] More importantly, that conclusion was bolstered by a series of Louisiana Attorney General Opinions issued in 2010 that held that the running surface waters of the state were "public

80. Jackson v. Walton, 2 La. App. 53 (La. Ct. App. 1925).

81. *See, e.g.,* James Klebba, *Water Rights and Water Policy in Louisiana: Laissez Faire Riparianism, Market Based Approaches, or a New Managerialism?*, 53 LA. L. REV. 1779 (1993) and Joseph W. Dellapenna, *supra* note 68. In the latter article, Professor Dellapenna makes the interesting observation that despite the state's distinctive legal history, "Louisiana remains closer to the classic common law of water rights for both surface water and groundwater than any of the common law states in the region." *See* Dellapenna, *supra* note 68, at 77.

things."[82] The flurry of Attorney General Opinions in the spring of 2010 was not a spontaneous event but was triggered by demands for water from nontraditional water users, most notably by companies seeking to develop natural gas from shale formations in northwest Louisiana. To get gas from such formations, it is necessary to fracture the shale, a practice that is done with highly pressurized and often adulterated water—millions of gallons per well.

Finding water in sufficient quantities to hydraulically fracture or "frack" the shale is a significant challenge. Since most of the gas fields are not on riparian land, the first sources of water pursued were aquifers. Under Louisiana law, groundwater is largely there for the taking, but concerns over impacts to drinking and agricultural water supplies caused the state to urge the gas industry to use surface waters for their fracking work,[83] water which, as already discussed, is not there just for the taking.

v. Act 955 of 2010 and the Birth of Regulated Riparianism in Louisiana

Following the Attorney General's rulings affirming Louisiana's riparian law and restricting the waters available for fracking, the legislature quickly enacted Act 955, which allows the state to authorize water withdrawals from the running waters of the state by nonriparians. This authority will sunset in 2012, but it has the potential to create water rights that extend until December 31, 2020.[84]

Though the legislature clearly envisioned Act 955 as a temporary measure (at least until the recommendations for a longer term approach called for by HCR 1 were received and acted on), it is already a fundamental change to how Louisiana approaches water law. With little discussion and fanfare, Louisiana has joined the ranks of states that have moved away from traditional riparianism to a permit-driven system that is known as "regulated riparianism."

82. La. Op. Att'y Gen. 08-0176 (La. A.G. 2010), 2010 WL 1512844; La. Op. Att'y Gen. 09-0028 (La. A.G. 2010), 2010 WL 1512843; La. Op. Att'y Gen. 09-0066 (La. A.G. 2010), 2010 WL 1512842; La. Op. Att'y Gen. 09-0291 (La. A.G. 2010), 2010 WL 2071071.

83. *Ground Water Use Advisory: Commissioner of Conservation Recommends Wise Water Use Planning in the Haynesville Shale*, LA. DEPT. OF NAT. RESOURCES (Oct. 16, 2008), http://dnr.louisiana.gov/index.cfm?md=newsroom&tmp=detail&aid=509.

84. *See* LA. REV. STAT. ANN. § 30:961(E) (2010) and Act 955, *supra* note 2.

In making this move, Louisiana joins a trend that began in the 1950s that recognized that the best uses of water may not be just those associated with appurtenant lands and that water use is too important to leave unregulated. At its heart, regulated riparianism treats flowing water as a public good that is subject to societal decisions not just those of certain land owners and that is managed more holistically. Twenty states, excluding Louisiana, now have some version of regulated riparianism.[85]

It is too early to evaluate the permitting program authorized by Act 955, but it is already clear that the Act, having provisions that are sometimes difficult to interpret or reconcile, will likely raise more questions than answers. It is notable that Louisiana embarked on this undertaking as a matter of great urgency and with very little public discussion and little comparative analysis of the experience in other states. Going forward it is likely that experience will become more important to learn from. Although Louisiana's water needs and challenges may be unique, they are not so different that the administrative processes that have been proven successful (or unsuccessful) in other states will not be powerfully instructive.

As Louisiana plans for water management beyond 2012 the need to thoughtfully consider not only the experience of other states but also such resources as the Regulated Riparian Model Water Code[86] and the Second Restatement of Torts[87] will become more and more important.

The path Louisiana chooses will have far-reaching implications. If large-scale out-of-basin consumptive uses of surface water are allowable—even encouraged—for one purpose, it may be impossible to restrict it for others, such inter-basin or interstate freshwater diversions. This is not an academic point. Texas, for example, has had plans since at least the 1960s to divert up to 1.5 million acre-feet of the Mississippi River per year to augment its fresh water supplies.[88]

85. For a list of states with version of a regulated approach to surface water use, see SAX, ET AL., *supra* note 32, at 104.

86. WATERS LAWS COMM., THE REGULATED RIPARIAN MODEL WATER CODE (Joseph W. Dellapenna, ed., ASCE 1997).

87. *See E.g.*, RESTATEMENT (SECOND) OF TORTS §§ 850, 850A, 855 & 856 (1979).

88. *See* Tex. Water Dev. Bd., The Texas Water Plan Summary 12 (Nov. 1968).

IV. LOUISIANA'S ROLE IN THE EMERGING WATER ECONOMY

Riparian rights and the uses to which Louisiana's surface waters have been put have long been a neglected area of Louisiana law. Indeed, the same could be said for Louisiana water law in general, including questions about groundwater, public and private ownership and rights of use, rights of reclamation, and the relationship between mineral rights and surface ownership, particularly in the state's coastal region. Such concern is not new, but it has produced relatively few changes until recently and those have been halting and even temporary in some cases (as is the case with Act 955).

In the specific case of surface waters, the present and growing interest in using those waters for consumptive industrial purposes (such as fracking) or for export to increasingly dry states such as Texas will soon test both the bounds of Louisiana law and the will and wisdom of all branches of state government. The status quo will not hold. It is clear that we are headed for a future in which the availability and control over freshwater will increasingly determine who prospers and who suffers, who succeeds and who fails, and whether water will be just a commodity going to those with the ability to pay for it or whether it will also sustain our cultural and natural heritage. The only question is what role Louisiana will choose to play in charting that future.

The urgency of embracing this challenge can be seen all around us. Boston, Atlanta, and parts of Florida face a future without readily available water.[89] Georgia is in a deepening dispute with Florida, Alabama and the Army Corps of Engineers over the use and management of the Apalachicola, Flint, and Chattahoochee rivers system in order to ensure Atlanta's water future.[90] Georgia is also contesting its boundary with Tennessee

89. "Boston, Atlanta and much of Florida are nearing the end of readily available water." Senator Pete Domenici, "Water Desalination Facilities, Energy and Reclaimed Water," Chairman Pete Domenici testimony, Senate Energy and Natural Resources Committee, October 20, 2005, *quoted in* CYNTHIA BARNETT, MIRAGE: FLORIDA AND THE VANISHING WATER OF THE EASTERN U.S. 169-70 (2005).

90. *See*, *e.g.*, Joseph W. Dellapenna, *Interstate Struggles Over Rivers: The Southeastern States and the Struggle Over the Hooch*, 12 N.Y.U. ENVTL. L.J., 828. Litigation over this complex controversy began in 1990 and is still on going as of the date of this writing. *See*, *In re* MDL-1824 Tri-State Water Rights Litig., No. 09-14657, 2011 WL 2536507 (11th Cir. June 28, 2011).

in order to claim a share of the Tennessee River.[91] South Carolina recently settled litigation in the United States Supreme Court against North Carolina to the apportionment of the Catawba River.[92] News accounts and scientific studies attest to shifting climates and rising seas that will affect both demands on and uses of our water resources.

Interest in these water issues is growing in Congress as well. The House Committee on Science and Technology has already held hearings looking into the need for more coordinated federal approach to research and development. The sense of mood is evident from Chairman Bart Gordon (D-Tenn.) who has stated, "[c]onstraints on water supplies are taking a toll on society, our economy, and the environment. Water is too valuable a resource for us to manage in a crisis-by-crisis fashion."[93] Plainly, this game is already underway and Louisiana needs to play a much more active role.

V. CONCLUSIONS AND RECOMMENDATIONS

Louisiana is a state rich in water resources, so much so that it has taken them for granted in many ways. We now stand on the threshold of a new era in which freshwater will be recognized as a scarcer and more valuable resource. It will also increasingly be viewed and managed as a regional or national resource. To promote the welfare of its people and economy and discharge its natural resource stewardship and public trust duties, the state needs to recognize the enormity and urgency of this challenge and opportunity and should consider the following recommendations:

1. Louisiana needs to systematically review the entire body of its current water and policies and assess if and to what degree they reflect the state's present and future needs and priorities. At the least, this should include its laws regarding surface waters, groundwater, public and private ownership of waters, banks and water bottoms, mineral ownership, and

91. *See*, Shelia Dewan, *Georgia Claims a Sliver of the Tennessee River*, N. Y. TIMES, Feb. 22, 2008.

92. South Carolina v. North Carolina, 131 S. Ct. 855 (2010).

93. *Twenty-first Century Water Planning: The Importance of a Coordinated Federal Approach*, 111th Cong. 8 (2009) (statement to House Comm. on Sci. & Tech.), *available at* http://www.gpo.gov/fdsys/pkg/CHRG-111hhrg47553/html/CHRG-111hhrg47553.htm.

reclamation.

2. With regard to surface waters specifically, the state needs to assess, explicate, and, where necessary, change or clarify the rights of riparians and others to use the surface waters of the state.

3. Louisiana should actively and closely monitor national and regional developments, such as the recently settled *South Carolina v. North Carolina* case,[94] and use them as a template for framing and articulating its rights, needs, and values. It should be prepared to engage in those where appropriate and be a leader in regional watershed planning and management. By way of illustration, the state should play a greater role in the efforts to lower nutrient levels in the Mississippi River and reduce the hypoxia problem in the Gulf of Mexico.

4. Louisiana should be aggressively making its need for specific aquatic resources clear and acting to secure or defend them. Examples of this include: (a) demanding the development of water and sediment budgets for the Mississippi River and linking those to its plans to rehabilitate Louisiana's coast; (b) working to ensure that the interstate waters and sediments we receive are suitable in quality and quantity for the state's vital interests; and (c) aggressively exercising the rights the state has under laws such as the Coastal Wetlands Planning, Protection, and Restoration Act to demand that navigation, flood control, and irrigation projects under federal control be conducted in way consistent with the comprehensive plans to restore coastal Louisiana.

The things touched on in this paper, if nothing else, suggest that water law, in general, and riparian law, in particular, need to be brought into the twenty-first century. This will be no small undertaking, but it is one the state cannot afford to ignore. No state is in a better position to lead and benefit from the development of the emerging "water economy" and no state is presently less ready. It is very much the business of us all to help change that.

94. South Carolina v. North Carolina, 131 S. Ct. 855 (2010).